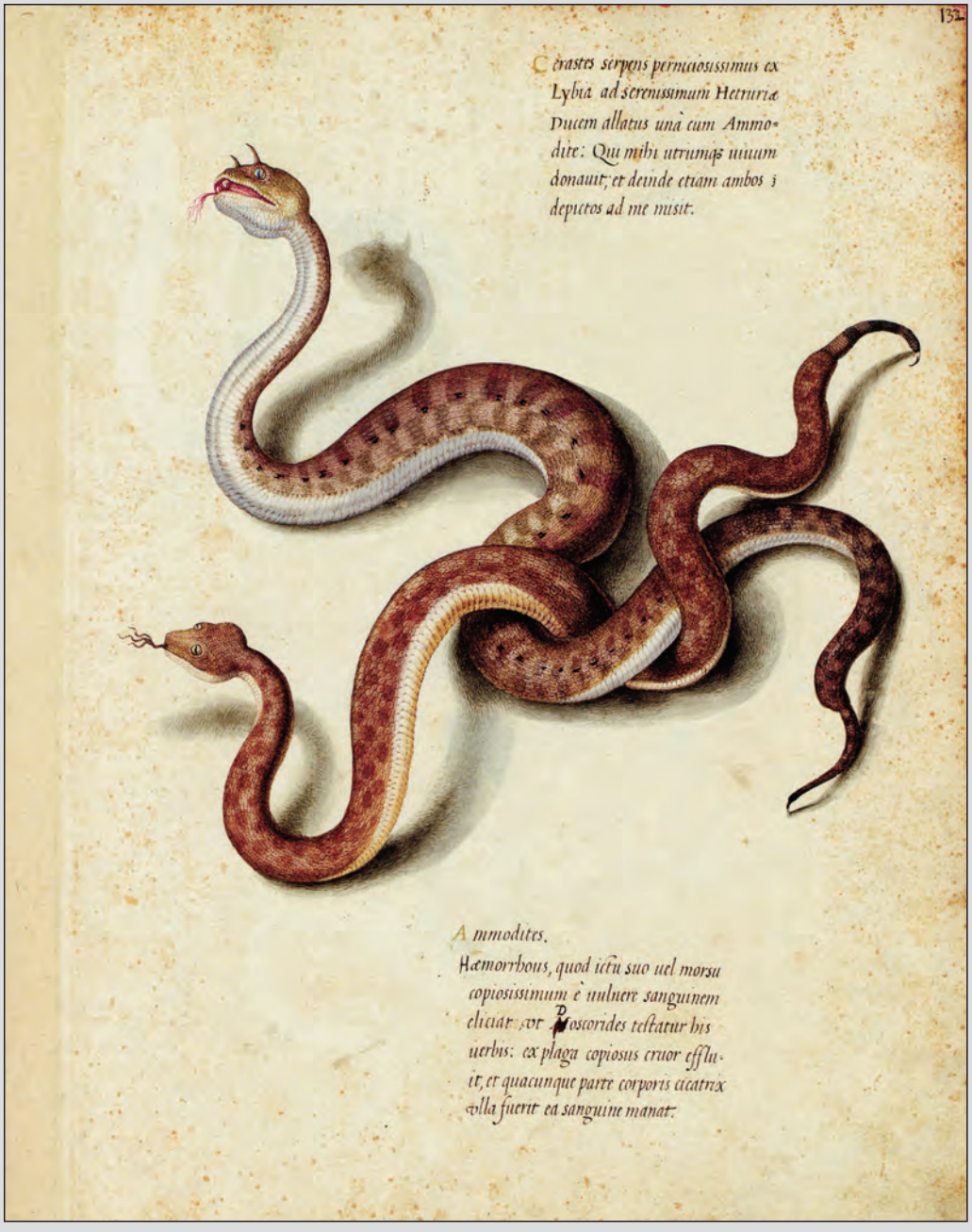
Bibliotheca Herpetologica

A Journal of the History and Bibliography of Herpetology



VOL. 7, NO. 2, 2008

International Society for the History and Bibliography of Herpetology

The Society

The **ISHBH** is a not-for-profit organization established to bring together individuals for whom the history and bibliography of herpetology is appealing, to promote the knowledge of related topics among members and the general public, and to promote research. Membership is open to anyone who shares the aims of the Society.

Membership

The biennial fees for 2008-2009 are as follows: Benefactor US$100, Sponsoring US$50, and Regular US$30. Lifetime membership starting from 2008 is US$300. Institutions pay minimum US$50. The fee includes a subscription of two volumes to the Society's journal *Bibliotheca Herpetologica*. Membership application forms that include the possibility to order back issues can be found on our website. Payment can be made by personal check or money order in USD drawn on a US bank sent to the Secretary-Treasurer or the Chairperson. Payment can also be made by transfer in euro to PlusGirot, Sweden, IBAN SE83 9500 0099 6042 0455 1206, BIC NDEASESS. Payment by credit card can be made on the Internet to Bibliomania!, www.herplit.com. Bibliomania! has kindly offered the assistance in collection membership dues and the Society is sincerely indebted for the service provided gratis by Breck Bartholomew and staff. Current members will be contacted in due course with renewal information.

Members are encouraged to contribute with articles, essays, news of meetings, hints on antiquarian trade, book reviews and other issues associated with herpetology. The Society organizes seminars, visits to libraries, museums, etc. in connection with herpetological meetings with international participation. The Society works to facilitate informal contacts among members so that the members can meet, offer support in knowledge and transact exchanges of literature.

Correspondence to the Society shall be addressed directly to a Committee member or officer, either by post or email.

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Authors submitting a manuscript do so on the understanding that the work has not been published before and is not being considered for publication elsewhere. Manuscripts are peer reviewed.

The language of *Bibliotheca Herpetologica* is English. Consult the latest issue of *Bibliotheca Herpetologica* for article format. The Editor reserves the right to adjust style to maintain uniformity.

Manuscripts and illustrations should be submitted to the Editor in electronic form. Color illustrations other than used for the cover will be at the author's expense. The ISHBH cannot take responsibility for material sent by post.

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Society News

The Herpetological Legacy of Linnaeus: A Celebration of the Linnaean Tercentenary – A symposium initiated by ISHBH and sponsored by The Herpetologists' League

As planned and earlier announced in this journal and on the website, the Society commemorated the year of the 300th birthday of Carl Linnaeus (1707-1778) with a symposium held on 14 July 2007 at the Joint Meeting of Ichthyologists and Herpetologists, hosted by St Louis University in St. Louis, Missouri, USA, 11-16 July. Herpetologists' League kindly sponsored the event. It was a well-targeted blend of presentations, eleven in all, reflecting the scientific contributions to herpetology by Linnaeus and his pupils. Linnaeus is the father of the modern biological taxonomy system and the inventor of the binomial nomenclature. It would certainly be beneficial to the community if the lectures at the symposium also can be presented as a proceedings, a project that a group of symposium delegates is presently looking into. This would be the first extended summary of Linnaeus's achievements in herpetology and would form a potential cornerstone for further studies in historical herpetology.

During the intermissions the delegates were able to examine many of the distinctive publications by Carl Linnaeus of immediate significance to herpetology in a book exhibition set up for this purpose with items from private sources. A study tour to a library with an immense holding of Linnaean original publications took place after the lectures and the traditional shared luncheon of Society members and guests. Our thanks go to Robert E. Magill and James C. Solomon of the Missouri Botanical Garden, who so kindly opened up this unique library for the Society members and shared the knowledge in demonstrating the books.

Correspondence to the Society

The box-address in Sweden is being closed. Regular post and email should in the future be addressed directly to the Officers depending on subject matter. The Chairperson and the Secretary/Treasurer can receive membership payments by mail as well as changes to the membership records.

Editor sought

Our Editor, Patrick David, who has served the Society from 2005, will leave his post after the expiration of the present term in 2008. Individuals who would like to nominate a candite or inquire about the position should contact the Chairperson.

About the Cover

The cover is a reproduction of a tempera painting produced under supervision of Ulisse Aldrovandi (1522-1605). The entire collection of the original paintings, many depicting reptiles and amphibians, is still preserved in the library of the University of Bologna in Italy. The plates are now accessible on the Internet (www.filosofia.unibo.it/aldrovandi/) and several have been reproduced in a book published 2007. Massimo Delfino and Alessandro Ceregato provide the background and details in their paper *Herpetological Iconography in 16th century: the Tempera Paintings of Ulisse Aldrovandi* (pp. 4–12).

The plate reproduced on the cover shows at top, *Cerastes cerastes* (Linnaeus, 1758) and bottom possibly *Cerates vipera* (Linnaeus, 1758). Both drawings are particularly accurate but the tongues are not bifid and develop a small tuft, and the tails shrink much too abruptly and terminate with a sort of spine. Tempera on paper by Jacopo Ligozzi. Tavole di Animali T. IV, c.132. Ms Aldrovandi, Biblioteca Universitaria Bolognese.

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Herpetological Iconography in 16th century: the Tempera Paintings of Ulisse Aldrovandi

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Like most of the philosophers, physicians and collectors of naturalia during the Renaissance, Ulisse Aldrovandi (Bologna, Italy 1522-1605) built-up his own Theatrum Naturae starting from his own copy of Plinius the Elder's "Naturalis Historiae" (1553), the copy on which he annotated every line with his own observations. Aldrovandi introduced neither a new Systema Naturae nor a revolutionary approach to science, but rather he was the first Natural History teacher in a University, and in a period in which the Wunderkammern flourished all over the European courts, his cabinet of natural curiosities was the first Natural History museum opened to the public. He was largely influenced by his "colleagues" – Guillaume Rondelet, Pierre Belon, Luca Ghini, Conrad Gessner, Pier Andrea Mattioli among others – and by the classical and medieval tradition. His rich library included works by Plinius, Dioscorides, Theophrast, Galen and all the most important books on anatomy and medicine, including the renowned Vesalius' "De humani corporis fabrica" (1543), the first modern atlas of the human body, with the frontispiece drawn by Titian and the anatomical tables by Jan Stephan Van Calcar.

Aldrovandi studied medicine at the University of Bologna, but he soon devoted his interest to zoology and botany under the guidance of Guillaume Rondelet and Luca Ghini. More than his colleagues he understood the pedagogic function of images and the importance of the accuracy in representing the natural things in order to objectively describe them. Aldrovandi created a small laboratory at his home where, under his supervision, several artists reproduced on paper the specimens he directly recovered or obtained from his colleagues. Aldrovandi's favourite artist Jacopo Ligozzi, who worked for the Grand Dukes of Tuscany, but also Giovanni Neri, the author of most of the zoological drawings, Passarotto Passarotti (son of the more famous Bartolomeo), Lorenzo Benini, and Cornelius Schwindt, produced about 3,000 tempera paintings. Cornelius Schwindt himself and sometimes Lorenzo Benini and others, copied the tempera paintings on the pear wood matrices, then engraved by Cristoforo Coriolano and later on by Gian Battista Coriolano. Some of Aldrovandi's students annotated all the known names of the portrayed subjects not only alongside each drawing, but also on the back of the thousands of woodcuts engraved for illustrating the printed edition of his great "Historia Naturalis". Unfortunately, Aldrovandi died after the publication of the fourth of the thirteen volumes, but at least two of the posthumous works, edited by his pupil Jan Cornelis Wterwer, were almost ready before 1605. The two books "De quadrupedib[us] digitatis ..." (1637) and "Serpentum et dracon[um] historiae ..." (1639), with the engravings by Cristoforo Coriolano (alias Christophorus Lederlein, an engraver from Nürnberg who also illustrated the "Le vite de' più eccellenti Pittori ..." by Giorgio Vasari), and by his son Gian Battista Coriolano, were edited by Bartolomeo Ambrosini, the curator of Aldrovandi's Museum inherited by the city of Bologna. The limits of the xylographic technique and the strong tampering with Aldrovandi's manuscript made by Ambrosini compromised the final version of the book

Fig. 1. Salamandra salamandra *(Linnaeus, 1758). The name reported in the caption, "salamandra terrestris", distinguishes this terricolous salamander from the more aquatic newts whose name annotated by Aldrovandi is "salamandra aquatilis". [Tempera on paper by Cornelius Schwindt (?). Tavole di Animali T. VII, c.94. Ms Aldrovandi, Biblioteca Universitaria Bolognese.]*

but, luckily, the entire collection of tempera paintings produced under the direction of Aldrovandi, is still available and preserved in the library of the University of Bologna (Biblioteca Universitaria Bolognese).

For the celebrations of the 400th anniversary of the death of Aldrovandi, all the tempera paintings have been digitalized and made available through the world wide web (website in Italian permanently stored at www.filosofia.unibo.it/aldrovandi/) and a collection of 500 selected and critically commented tempera paintings, 21 of them concerning amphibians and reptiles, has been recently published in a book (Alessandrini & Ceregato 2007). The present contribution to the knowledge of 16th century herpetological iconography is largely based on the information available, in Italian, in this book.

Among the several paintings produced under the direction of Ulisse Aldrovandi about 50 tables portray amphibians and reptiles. Their number and their quality allow this collection of images to be considered as the first attempt to organize an iconographic atlas of the Italian and Mediterranean herpetofauna and, without any doubt, the first collection of herpetological images realized with relatively modern criteria. Amphibians and reptiles appear with a certain frequency in the scientific iconography of 16th century, but the quality of the images published by authors as Belon, De Bry, Gessner, Imperato, Mattioli or Ramusio, is far from being as precise and pleasant as the tables of Aldrovandi, tables that are remarkable because of the richness and the accuracy of details and, above all, for the presence of colours. Although a comparison among images produced with different techniques is, obviously, hazardous, the incisions published by his contemporary authors (usually xylographies), or published after a few decades by Jonston (1650-1653; copper-engravings in some cases explicitly copied from the works by Aldrovandi), but also those inspired by the same paintings edited by Aldrovandi and then published posthumously under his name, as the snakes of the "Serpentum

Fig. 2. Pseudopus apodus *(Pallas, 1775). The European Glass Lizard is particularly rich of details, like the large dark and bifid tongue, the evident otic aperture, and the covering of large scales that is interrupted on the flanks by a "line" of skin allowing the body to inflate during respiration. [Tempera on paper by Giovanni Neri. Tavole di Animali T. IV, c.136. Ms Aldrovandi, Biblioteca Universitaria Bolognese.]*

et Draconum Historiae" in 1639, are heavily affected by an excessive simplification. Not even thinking about the absence of colour, such simplification renders them not only less pleasant, but very unnatural and sometimes useless to represent the distinctive characters of a species.

The 47 herpetological tables contain on the whole 75 drawings portraying at least 34 taxa (some figured in two views); in the 23 drawings concerning amphibians and in the 52 concerning reptiles it has been possible to identify, at various level of precision, 28 species (5 amphibians and 23 reptiles; see Appendix I). Twenty-one of these species belong to the Italian herpetofauna; the remaining seven are somehow "exotic". In those tables containing several specimens, the classifying principle seems to be the morphologic resemblance (as in the case of frogs, skinks, and snakes) or, much less frequently, the presence of anomalies. In fact, although in most of the cases the portrayed specimens have a "normal" morphology, a particular attention has been paid, as in the entire activity of Aldrovandi, to the "deviant" specimens. In the case of the amphibians, a couple of apparently nearly metamorphosed toadlets with remnants of the tail and unusual body proportions shows the bizarre condition

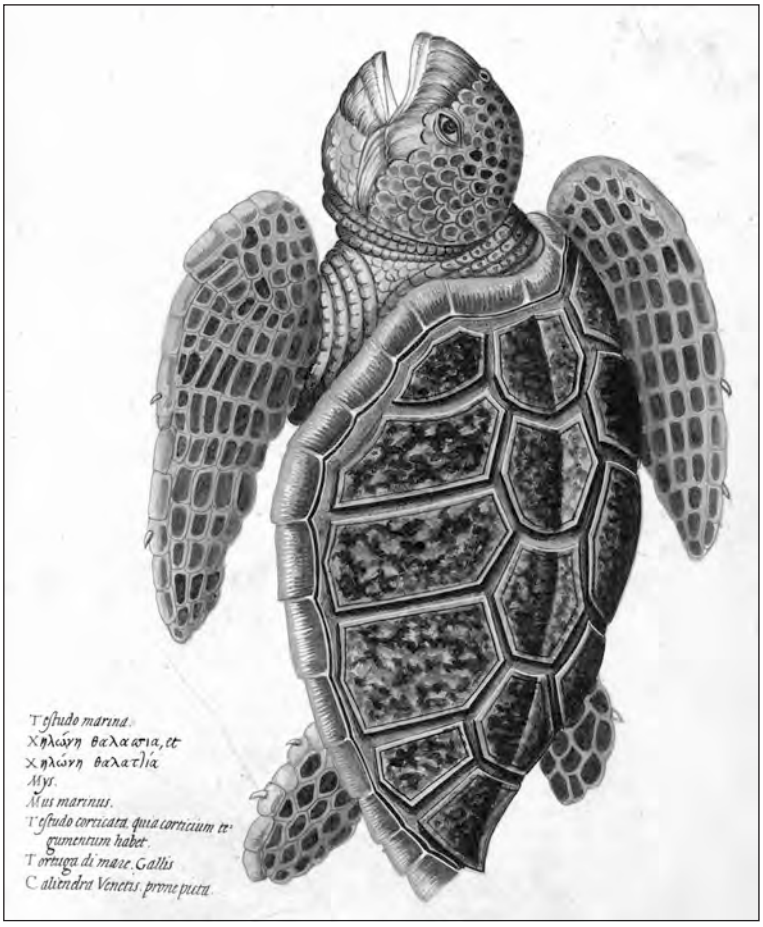

Fig. 3. Caretta caretta *(Linnaeus, 1758). The limbs correctly show two claws and the shell pattern is rather natural but the skin scales are too evident and somehow recall the metallic armour of a Middle-Age knight. [Tempera on paper by Giovanni Neri. Tavole di Animali T. IV, c.68. Ms Aldrovandi, Biblioteca Universitaria Bolognese.]*

of having or not evident teeth. Teeth which, even if present (and this is not the case of the genus *Bufo* indicated in the original caption), are never so evident and never externally visible. Such specimens, still preserved in the Aldrovandi's collection at Museo di Palazzo Poggi, actually are chimeras made by the mix of different adult toads and mammal teeth.

Among reptiles, the table concerning the lizards of the genus *Podarcis* is of exceptional relevance: it has been organized in order to represent the possible anomalies of the tail, including its (temporary) absence which allows defining the "lacerta biceps", the lizard with two heads!

Great attention has been paid to some morphological details, as the four fingers in the foreleg of the frogs, or the "lateral line" devoid of osteoderms in the European Glass Lizard *Pseudopus*, but gross errors are not few. Worth mentioning is the tongue tip of some snakes (as the North African *Cerastes* vipers or the grass snake) that is not bifid but develops a small tuft, or the tail of the vipers that shrinks much too abruptly and terminates in some cases with a sort of spine, or the scales of *Elaphe quatuorlineata* that correctly overlap (proximally anchored and distally free) in the first fourth of the body but are embricated in the opposite way in the rest of the body (as if the painter got confused with such a long body and all those curves), or even the fabulous, but at least partially invented, surface of the loggerhead turtle that recalls the metallic armour of a Middle-Age knight. Peculiar is the case of the young crocodile and that of the two

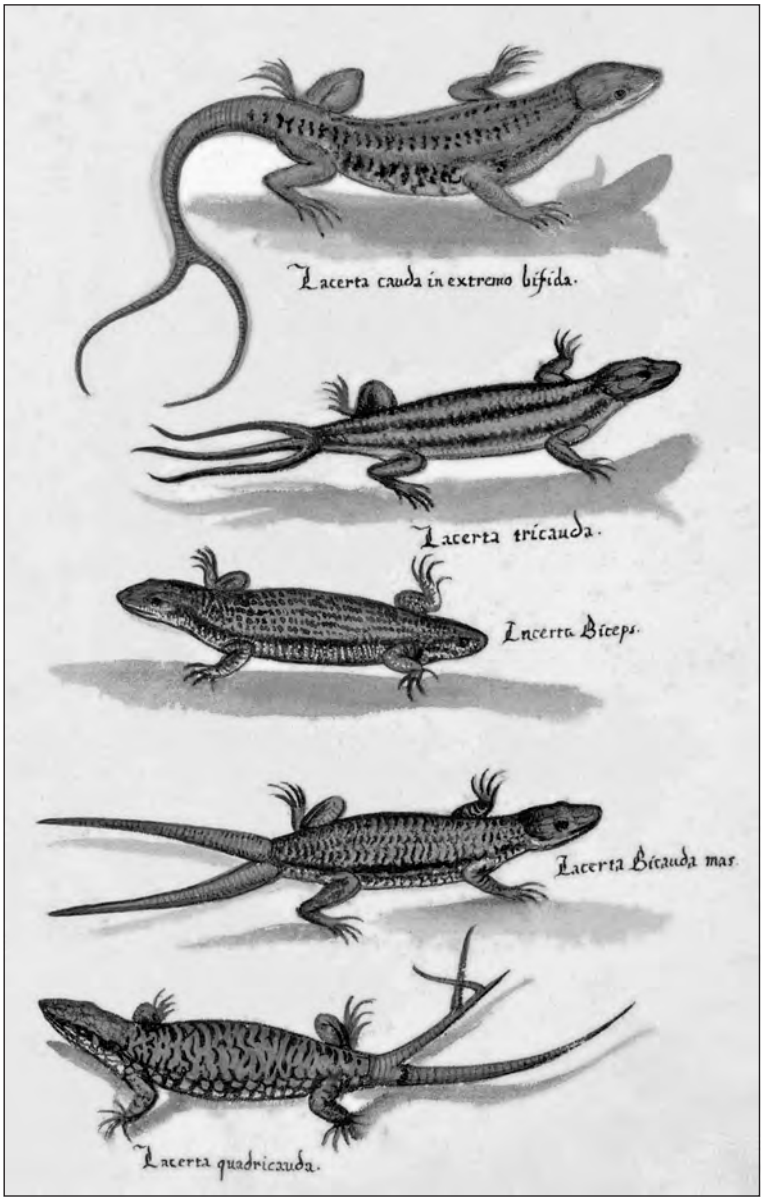

Fig. 4. Podarcis *sp. The specimen at the top could possibly belong to* P. sicula *(Rafinesque, 1810). This exceptional table shows several tail anomalies. Of interest is that the name associated with the lizard without a tail is "lacerta biceps", the lizard with two heads (note the dark spot corresponding to the hypothetical eye). [Tempera on paper by Cornelius Schwindt. Tavole di Animali T. VII, c.121. Ms Aldrovandi, Biblioteca Universitaria Bolognese.]*

Uromastyx which have an "inflated" neck and body as we can see nowadays in the stuffed specimens sold to tourists in the markets of the countries in which these animals live.

Therefore, it is likely that some paintings were produced on the basis of stuffed specimens (as the exotic animals) whilst others, mostly in the cases of animals easy to find (as the Italian lizards) or quickly perishable (as the amphibians) were produced on the basis of living animals.

Apparently, vipers got special attention and their drawings are relatively numerous: three of the four Italian species are represented in the tables of Aldrovandi and, although not precise, the table dedicated to the North African vipers is particularly nice. This special attention is probably connected to the danger that vipers

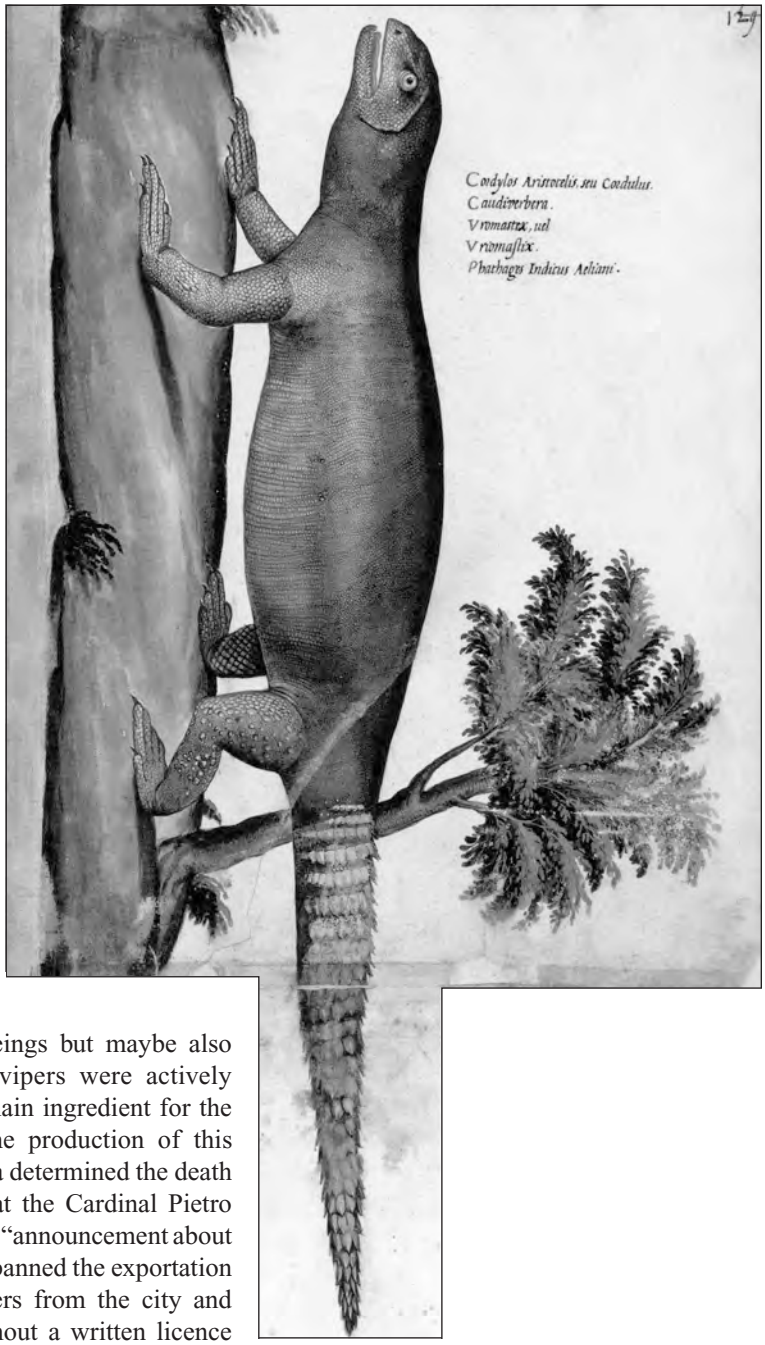

Fig. 5. *One of the two possible specimens of* Uromastyx aegyptia *(Forskål, 1775) portrayed for Aldrovandi. The inflated appearance of the necks and the bodies of these lizards and other exotic specimens indicates that some drawings were realized on the basis of stuffed specimens imported from abroad. In fact, the specimen figured in this drawing is still present in the Aldrovandi's room of the Palazzo Poggi Museum (specimen unnumbered). It seems likely that no information was available about the ecology of these animals, here figured in a humid and vegetated context instead of an arid environment. Note that one of names annotated close to the animal, "Uromastex" (but "Uromastyx" is written beside the painting of the other specimen), is the still valid scientific name of the genus. [Tempera on paper unknown author. Tavole di Animali T. V, c.137. Ms Aldrovandi, Biblioteca Universitaria Bolognese.]*

represent for human beings but maybe also because for centuries vipers were actively collected and used as main ingredient for the renowned "teriaca". The production of this sort of universal panacea determined the death of so many animals that the Cardinal Pietro Vidoni issued in 1663 an "announcement about the vipers" in which he banned the exportation of any quantity of vipers from the city and county of Bologna without a written licence (see Bruno, 1985).

Curiously, the sole anatomical detail of a reptile is represented by the head of a *Vipera aspis*, showing the teeth as indicated by the Latin caption of the figure. To the Renaissance science it was not clear which "instrument" vipers used to poison their victims and the hypotheses were numerous and contrasting (among others, a quill located at the tip of the tail – see the table with the African vipers, the saliva, or even the gall that could reach

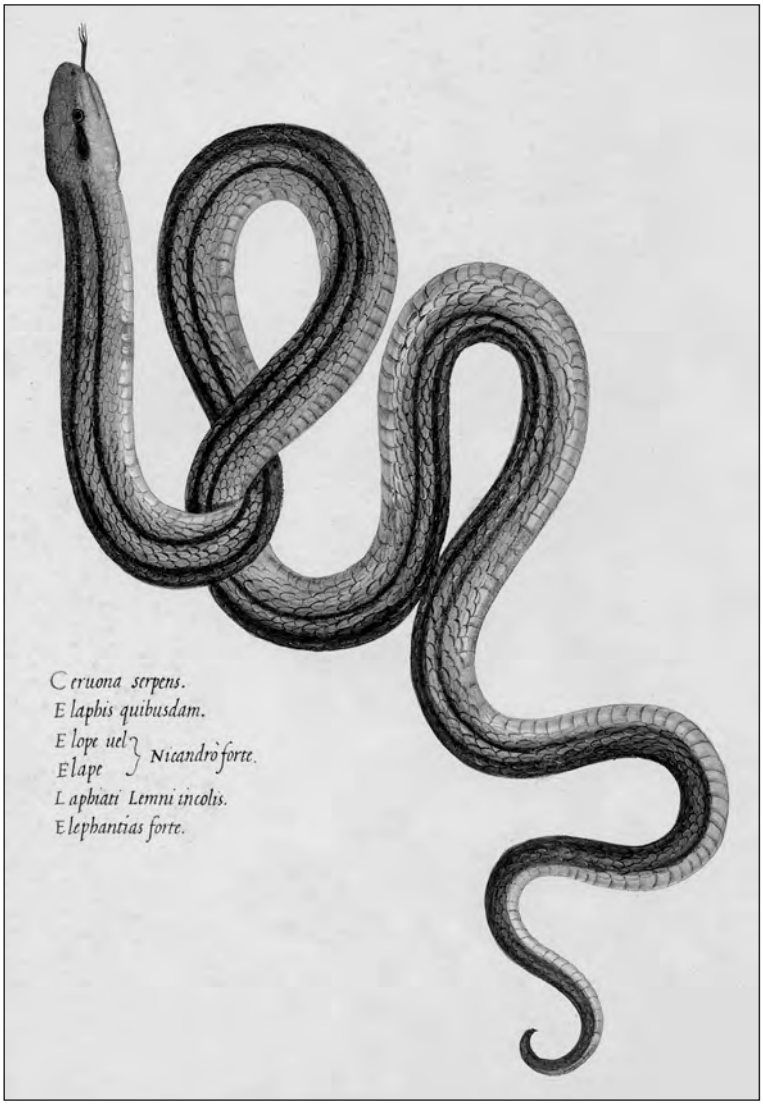

Fig. 6. Elaphe quatuorlineata *(Lacepède, 1789). Note that the tongue has three tips and that the scales of the posterior sector of the body are wrongly embricated. The name used in the caption, "ceruona", recalls the common Italian name "cervone". [Tempera on paper by Giovanni Neri. Tavole di Animali T. IV, c.135. Ms Aldrovandi, Biblioteca Universitaria Bolognese.]*

the mouth thanks to special ducts). Not even Francesco Redi (1664), who, some decades after the death of Aldrovandi, disproved several ancient and Renaissance theories with an astonishing rigour of reasoning and an experimental approach as simple as effective, will succeed in fully understanding the role of the teeth. He concluded that they could facilitate the contact of the circulatory system of the victim with a yellowish liquor with the taste of sweet almond produced by glands whose ducts open in the teeth's sheath.

In conclusion, it is necessary to underline that, lacking a system of binomial nomenclature, most of the figured species are associated with a definition comprising the popular names, as well as the Latin and Greek names, or even information about their ecology ("salamandra terrestris" for *Salamandra salamandra* and "salamandra aquatilis" for the newts), or distribution (as the Nose-Horned Viper from "Schiavonia" for *Vipera ammodytes*).

It is not unimportant that some of these names have been at least partly accepted by the renowned naturalists of the second half of the

18th century (as "cerastes" used by Linnaeus and *Lacerta viridis* used by Laurenti) or that still today, sometimes slightly transformed, are the common Italian names (as "cervone" for *Elaphe quatuorlineata* and "marasso" for *Vipera berus*; cf. Razzetti *et al.* 2001).

Appendix I - List of the taxa portrayed in the tempera paintings of Ulisse Aldrovandi

In this section the taxa portrayed by Aldrovandi are alphabetically listed along with indications concerning volume, plate, and the number of figures in which they appear (the number in square brackets). Although a conservative identification is proposed in some cases (as for *Podarcis* sp.), it is likely that the members of groups of species morphologically similar and variable actually belong to the species more easily available in the Bologna area or in Italy. As an example, we can suggest that the green lizards on which the paintings have been based on are probably specimens of the Italian *Lacerta bilineata* and not of *Lacerta viridis* which only marginally inhabits Italy, or that the small lacertid lizards conservatively identified as *Podarcis* sp. are actually *P. sicula* or *P. muralis*, species which are, and likely were, quite common in the Bologna area. However, for the sake of strictness, crested newts, tree frogs, green frogs, and green lizards have been referred only at group level (group named after its more representative species).

Amphibians

Caudata: *Salamandra salamandra* - T. VII, c.94 [1]; *Triturus* gr. *T. cristatus* (Laurenti, 1768) - T. VII, c.113 [4]

Anura: Anura indet. - T. V, c.67 - T. VII, c.30, 31 [3]; *Hyla* gr. *H. arborea* (Linnaeus, 1758) - T. VII, c.105 [1]; cf. *Rana* sp. - T. VII, c.12, 13 [2 skeletons]; *Rana* sp. (brown frog) - T. VII, c.29 [1]; *Rana* gr. *R. ridibunda* Pallas, 1771 - T. VII, c.26, 27, 28, 29 [10]; *Rana* cf. *R. dalmatina* Fitzinger in Bonaparte, 1838 - T. VII, c.32 [1]

Reptiles

Crocodylia: *Crocodylus niloticus* (Laurenti, 1786) - T. V, c.39 [1]

Chelonii: *Caretta caretta* (Linnaeus, 1758) - T. IV, c.68, 69 [2]; Cheloniidae indet. - T. IV, c.122 [1]; *Emys orbicularis* (Linnaeus, 1758) - T. IV, c.78 - T. V, c.43, 44 [3]; *Testudo hermanni* Gmelin, 1798 - T. V, c.41, 42 [2]; *Testudo* sp. - T. IV, c.77 [1]

Lacertilia: *Anguis fragilis* Linnaeus, 1758 - T. VII, c.104, 107 [2]; *Chalcides chalcides* (Linnaeus, 1758) - T. VII, c.118 [2]; *Chalcides ocellatus* (Forskål, 1775) - T. VII, c.109 [1]; cf. *C. chamaeleon* (Linnaeus, 1758) - T. VII, c.112 [1]; Chamaeleonidae indet. - T. VII, c.103, 112 [2]; *Lacerta* gr. *L. viridis* (Laurenti, 1768) - T. IV, c.52 - T. VII, c.106, 125 [4]; Lacertilia indet. - T. V, c.67 [1]; *Mabuya* sp. - T. VII, c.109 [1]; *Podarcis* sp. - T. IV, c.52 - T. VII, c.95 (not *L. gr. L. viridis* as indicated in Alessandrini & Ceregato, 2007, fig. 457), 121 [7]; *Pseudopus apodus* (Pallas, 1775) - T. IV, c.136 [1]; *Scincus scincus* (Linnaeus, 1759) - T. VII, c.109 [2]; *Tarentola mauritanica* - T. VII, c.102 [2]; *Uromastyx* cf. *U. aegyptia* (Forskål, 1775) - T. IV, c.129 - T. V, c.37 [2]; *Varanus* sp. - T. V, c.38 [1]

Serpentes: *Cerastes cerastes* (Linnaeus, 1758) - T. IV, c.132 [1]; *Cerastes* cf. *C. vipera* (Linnaeus, 1758) - T. IV, c.132 [1]; *Elaphe quatuorlineata* (Lacepède, 1789) - T. IV, c.135 [1]; *Hierophis viridiflavus* (Lacepède, 1789) - T. IV, c.131, 137 [2]; *Natrix natrix* (Linnaeus, 1758) - T. IV, c.138B [1]; Serpentes indet. - T. V, c.143 [1]; *Vipera ammodytes* (Linnaeus, 1758) - T. IV, c.139 [1]; *Vipera aspis* (Linnaeus, 1758) - T. IV, c.133 [2]; *Vipera* cf. *V. berus* (Linnaeus, 1758) - T. IV, c.133 [1]; Viperidae indet. - T. V, c.143 [1]; *Zamenis longissimus* (Laurenti, 1768) - T. IV, c.134 [1]

Appendix II (provided by R. Wahlgren) – Names in Linnaeus (1758) with references to Aldrovandi, now syntypes when applicable

Testudo mydas Aldr. quadr. 712, t. 714 [Testudo Marina]. *Chelonia mydas*

Lacerta crocodilus Aldr. aquat. 677. [Crocodilo]. *Caiman crocodilus*

Lacerta agilis Aldr. quadr. 634. [Lacertus viridis]. *Lacerta agilis*

Lacerta chamaeleon Aldr. quadr. 670. *Chamaeleo chamaeleon*

Lacerta salamandra Aldr. quadr. 641. [Salamandra terrestris vera nigra…]. *Salamandra salamandra*

Lacerta aurata Aldr. quadr. 660. [Lacerta Cyprius scincoides]

Lacerta chalcides Aldr. quadr. 638. [Lacerta chalcidica]. *Chalcides chalcides*

Rana temporaria Aldr. ovip. 89. *Rana temporaria*

Coluber berus Aldr. serp. 115, 116. [Vipera Mas]. *Vipera berus*

Coluber chersea Aldr. serp. 197. [Aspidis]. *Vipera berus.* [Linnaeus was probably lured because the name resemblance of Swedish dialectical term for this snake "Aesping"]

Coluber fragilis Aldr. serp. 245. [Cæcilia vulgaris]. *Anguis fragilis*

Acknowledgments

B. Antonino, director of the "Biblioteca Universitaria Bolognese", kindly permitted the reproduction of the Aldrovandi's tempera paintings. F. Barbagli, A. Bauer, L. Bauer, P. Bergò, U. Fritz, C. van Kooten, E. Razzetti, R. Sindaco, A. Soldano, A. Venchi, C. Violani and J. de Vos suggested and provided relevant literature, commented earlier drafts of the manuscript or helped in the identification of the figured taxa. A. Bauer and R. Wahlgren kindly encouraged the publication of this manuscript; the latter provided Appendix II. The reviewers, S. Scali, R. Wahlgren, and an anonymous, as well as the editors, P. David and R. Tramontano, improved the submitted manuscript. G. Ragnolo revised the English grammar. Literature search has been partly preformed at the library of Naturalis, The Netherlands National Museum of Natural History (Leiden), while developing the Synthesys project NL-TAF 239.

References

Aldrovandi, Ulisse. 1637. De quadrupedib[us] digitatis viviparis libri tres, et de quadrupedib[us] digitatis oviparis libri duo. Bologna, Nicolaum Tebaldinum.

Aldrovandi, Ulisse. 1639. Serpentum et draconu[m] historiae libri duo. Bologna, Clementem Ferronium. [Reissued 1640.]

Alessandrini, Alessandro and Alessandro Ceregato (eds). 2007. Ulisse Aldrovandi – Natura Picta. Bologna, Compositori Editore.

Bruno, Silvio. 1985. Le vipere d'Italia e d'Europa. Bologna, Edagricole.

Jonston, Jan. 1650-1653. Historiæ Naturalis de Quadrupetibus Libri Cum ænis figuris. / Historiæ Naturalis de Quadrupetibus; de Serpentibus et Draconib. Francofurti ad Moenum, Hæredum Math. Meriani.

Linnaeus, Carolus 1758. Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Editio decima, reformata. Holmiae, Laurentii Salvii.

Plinius, Caius Secundus. 1553. C. Plinii Secundi Historiae mundi libri XXXVII ... cum indice totius operis copiosissimo. Lyon: Ioannem Frellonium.

Razzetti, Edoardo, Laura Bonini, and Franco Andreone. 2001. Lista ragionata di nomi comuni degli Anfibi e dei Rettili italiani. Italian Journal of Zoology 68(3): 243-259.

Redi, Francesco. 1664. Osservazioni intorno alle vipere, fatte da Francesco Redi Gentiluomo aretino, Accademico della Crusca, e da lui scritte in una Lettera all'Illustrissimo Signor Lorenzo Magalotti, Firenze: All'Insegna della Stella.

Vasari, Giorgio. 1568. Le vite de' più eccellenti Pittori, Scultori ed Architetti [...]. Firenze, Giunti.

Vesalius, Andreae. 1543. De humani corporis fabrica libri septem. Basileae, Officina Ioannis Oporini.Aldrovandi, Biblioteca Universitaria Bolognese.]

Bibliotheca Herpetologica, Vol. 7(2): 14–21, 2008

Antoni Andrzejowski and his Contributions to Early 19th Century Knowledge of the Ukrainian Herpetofauna

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The herpetofauna of what is today Ukraine was discussed briefly by a number of authors prior to the 19th century. Of particular note are the publications of Rzączyński (1721, 1736), who described at least eight species of reptiles from Ukraine and whose observations have been analyzed by Bayger (1938) and Fedorowicz (1966). Somewhat later contributions were those of Georgi (1775, 1800) and Pallas (1831). Much of the work of the latter author was based on material collected in the late 18th century, although most of this information was not published until well after the author's death, due to the delay in publication of the *Zoographia Rosso-Asiatica* (Stresemann 1951; Svetovidov 1976; Wendland 1992).

Perhaps the most well known of early to mid-19th century contributors to Ukrainian herpetology was Eichwald (1829–1832, 1830), followed by Dvigubsky (1832), and later Kessler (1850, 1853). However, important observations on amphibians and reptiles were also made by the botanist Antoni Andrzejowski (1785–1868; Fig. 1), who was one of the most well known 19th century Polish naturalists. From 1818 until 1832 he worked at the Lyceum of Volhynia in Krzemieniec (near Kiev in modern Ukraine), then one of the more important scientific centers of this area of Europe. He assisted the director of this institution, Willibald Swibert Joseph Gottlieb von Besser (1784–1842), an Austrian professor of botany who was largely responsible for making the Lyceum's botanical garden one of the most important in Europe. During the years 1814–1830, Andrzejowski made a series of expeditions to the Ukrainian territories of Volhynia, Podolia and Kherson, which he explored to the shores of the Black Sea. Included among these was the well known expedition of Karl Eduard Eichwald (1795–1876), then Professor at the University of Vilnius, in 1829 (Žalūdienė 2004). Some of Andrzejowski's collection and data were used by Eichwald, who did not credit his source (Feliksiak 1987), in his own account of the expedition (Eichwald 1830).

During his travels, Andrzejowski made rich natural history collections, mainly botanical and geological, as well as many physiographic observations. These expeditions were made possible by private Polish sponsors (Kremer 1869). In 1832 the Lyceum of Volhynia was closed by the Russian authorities and in 1833 it, and Andrzejowski, were transferred to the Lyceum of Kiev, which in 1834 became the University of St. Vladimir (Andrzejowski 1839). At the university he taught zoology and was in charge of the institution's Cabinet of Zoology. In 1839, following a period of general political repression, Andrzejowski was laid off. He then worked in private secondary education and was also occupied, until his death in 1868, by the care and direction of the botanical garden of Aleksander Branicki (1821–1877), a rich aristocrat, naturalist, and traveller and an important patron of the natural sciences.

Andrzejowski is best remembered as a botanist who was a specialist of the family Brassicaceae,

the author of floristic descriptions of the Ukraine (Andrzejowski 1823, 1830, 1869) and a proponent of a method for training in botanical terminology (Andrzejowski 1825). Andrzejowski compiled an important herbarium and authored a number of paleontological and geological publications as well as many descriptions of species of fossil invertebrates and living plants (Feliksiak 1987). His autobiography also provides a detailed description of the history and social life of Volhynia (Andrzejowski 1861a, 1861b). Andrzejowski had many talents. During his stay in Vilnius (now in Lithuania) he learned enough from various painters he met (Andrzejowski 1861b) to later be able to teach drawing. He also taught Latin and French and testimonies of the time portray him as very sociable and an excellent dancer (Przybylski 2003).

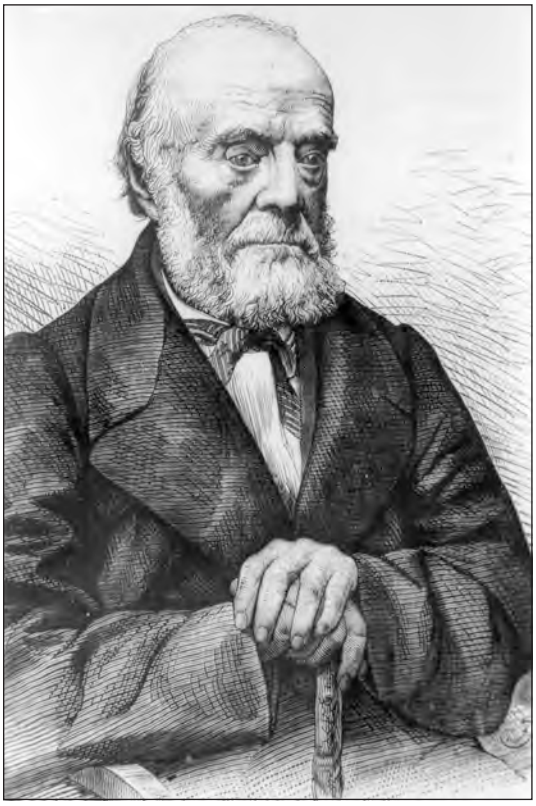


Fig. 1. *Antoni Andrzejowski (1785–1868) in later life. Original portrait in the Museum of the Earth, Polish Academy of Sciences, Warsaw(Archiwum Muzeum Ziemi PAN P-223) Artist and exact date unknown.*

Andrzejowski published only one strictly herpetological paper (Andrzejowski 1832). This publication, the first technical description of the herpetological fauna of the Ukrainian steppe, is well known and has been widely cited (e.g., Strauch 1873; Nikolsky 1905, 1915, 1916, 1918; Mertens & Wermuth 1960b; Szczerbak 1966; Kuzmin 1999; Kalyabina-Hauf & Ananjeva 2004). Amphibians and reptiles are also noted in his description of the zoological cabinet of Kiev (Andrzejowski 1839) as well as in chapters in his botanical books (Andrzejowski 1823, 1825, 1830).

Recently the authors took note of the existence of a herpetological manuscript of Antoni Andrzejowski, *Gady i Płazy nasze. Wyliczenie gadów i płazów jakie w wędrówkach swoich po Guberniach Wołyńskiey, Podolskiey i Chersońsiej aż do czarnego morza dotąd uważał i rozeznał Antoni Andrzejowski* [Our reptiles and amphibians or the enumeration of the amphibians and the reptiles met during my travels in the governments of Volhynia, Podolia and Kherson to the Black Sea, observed and determined until today by Antoni Andrzejowski]. This manuscript was previously quoted by Wanda Grębecka (2004, 2005), an eminent historian of science, specializing in the history of botany in Vilnius and Krzemieniec. The manuscript is preserved in the collection of the Archives of Museum of Zoological Sciences at the Polish Academy of Sciences in Warsaw.

The manuscript is written in Polish and comprises 16 pages. It is signed by Antoni Andrzejowski "assistant in botany and zoology at the Lyceum of Krzemieniec and member of the Society of the Naturalists of Moscow". It bears the date 1824 as well as the indication that it was written "in Krzemieniec". The manuscript is obviously a Polish version of the text published eight years later in Latin in the journal *Nouveaux mémoires de la*

Société impériale des naturalistes de Moscou (Andrzejowski 1832). Only some small details differentiate the Polish version of 1824 and the Latin of 1832.

It is unclear why there was an eight year delay between the preparation of the Polish manuscript and the appearance of the corresponding Latin publication. One possibility is that Andrzejewski initially intended to publish the text in Polish, as he did with his botanical descriptions. In this case the manuscript would not have been a simple draft of the publication of 1832 but a planned publication in its own right. However, we know that his Latin manuscript was sent to Moscow soon after it was written. Although not published until 1830, Andrzejowski's *Rys botaniczny krain zwiedzonych w podróżach pomiędzy Bohem a Dniestrem aż do uyścia tych rzek w morze, odbytych w latach 1823 i 1824* (Fig. 2), had already been completed in January 1825. In the faunal chapter of this book Andrzejowski (1830) indicated that:

> "in the preceding report [i.e., that published in 1823], I mentioned few species of reptiles and amphibians. The year 1823 was, for me, happier. We have in the collection of our college a new species of snake which I named "yellow-bellied" and also a lizard already described earlier (Rys. Bot. Page 83). After a meticulous comparison with illustrations and drawings, these two species proved to be unknown. I have thus presumed to give them names and, in small separate works, to describe them based on the drawings and thus rectify earlier errors."
>
> In a footnote he added "the new amphibians and reptiles, along with the other species that I met during my voyages, I have described under the title *Amphibia Nostratia* and I have sent this manuscript to the Mémoires de la Société Imper. des naturalistes de Moscou, where I hope it will very soon be accessible to the public. I have wished to give exact descriptions that differentiate them from other already known species which resemble them. I have included the most precise illustrations from nature that I managed to make."

Thus it is obvious that from the beginning Andrzejowski projected that the publication would appear in the Memoirs of the Society of Naturalists of Moscow, although a parallel publication in Polish might have been possible. Another possibility is that the manuscript was not a draft of a separate publication but rather part of a report of his travels. Because Andrzejowski's voyages were financed partially by the school administration and partially by private Polish sponsors he was undoubtedly obliged to prepare various reports to justify this support. That the manuscript forms part of the documents for the preparation of such a report is thus quite plausible. Lastly, there remains a third possibility. The text could have been prepared to accompany the herpetological collections of the Lyceum of Krzemieniec, possibly in the form of a teaching aid. This could explain the preparation in Polish, which was not only Andrzejowski's mother tongue, but also the language of the Lyceum of Volhynia. Unfortunately the manuscript text preserved in Warsaw lacks the drawings mentioned by Andrzejowski.

Andrzejowski's manuscript opens with an explanation that the area of Volhynia, where he lived, supported only a few of the reptile species that he knew from his travels in Kherson. Andrzejowski, who trained in Krzemieniec and Vilnius, was a qualified all-around naturalist, but he justified the decision to prepare a list of amphibian and reptile species by noting his desire to subject his observations, especially those regarding new species, to the judgement of specialists. In the manuscript he provides a list of eight books used for identifying his collection and explains that published illustrations were not used because they were not very precise and were mainly copied and recopied from the drawings of Seba, and later Buffon. Specifically, he consulted the works of Gmelin, Lacepède, Bonnaterre, Cuvier, Latreille and Bosc, Pallas, Merrem and Jarocki. This list includes the majority of the systematic works of the time that were likely to have been available to him and useful for his purposes.

In the manuscript Andrzejowski listed the following reptiles and amphibians (current names in brackets; these follow Kuzmin 1999 for amphibians and Szczerbak 1966, Kurilenko and Vervec 1999, and Kotenko 2006 for reptiles, with generic allocations following Frost et al. 2006 for amphibians and Utiger et al. 2002, 2005 and Nagy et al. 2004 for colubrid snakes):

Testudo Lutraria [*Emys orbicularis*]

Lacerta deserti [*Eremias arguta deserti*] (in the manuscript, but not the Latin publication, Andrzejowski added, in Polish, a description of the steppe lizard "*jaszczurka stepowa*" which is "a larger variety of this species")

Lacerta chrysogastra [*Zootoca vivipara*]

Lacerta agilis [probably *Lacerta agilis argus*, which occurs in northwestern Ukraine]

Lacerta Chersonensis [*Lacerta agilis chersonensis*]

Lacerta viridis

Lacerta elegans [*Lacerta viridis viridis*]

Coluber Natrix [*Natrix natrix*]

Coluber Aesculapii [*Zamenis longissimus*] (in the publication, after *Coluber aesculapii*, Andrzejowski added *Coluber laevis* [*Coronella austriaca*] which "Viget in campestribus Chersonensibus frequens" [flourishes in great numbers in the region of Kherson]; this species is probably absent from the manuscript because Andrzejowski encountered it during the period between the preparation of the text and its publication)

Coluber trabalis [*Dolichophis caspius*]

Coluber Xanthogaster [*Elaphe sauromates*]

Vipera berus

Vipera Prester [*Vipera berus nikolskii*] (with remarks that it is not a distinct species but only a form of *Vipera berus*, that it was captured by Kajetan Chlebowski near the village of Snitowki, and that it is rarer than typical *V. berus*)

Anguis fragilis

Anguis Bessseri [*Anguis fragilis colchicus*]

Bufo cinereus [*Bufo bufo*]

Bufo igneus [*Bombina bombina*] (in the publication, after *Bufo igneus*, Andrzejowski added *Bufo fuscus* [*Pelobates fuscus*], and also *Bufo variabilis* [*Pseudepidalea viridis viridis*], both species absent from his manuscript)

Rana temporaria

Rana esculenta (according to Kuzmin 1999, Andrzejowski's use of this name probably refers to both *Rana* kl. *esculenta* and *R. lessonae*; in the publication *R. esculenta* is presented before *Rana temporaria*)

Rana terrestris [*Rana arvalis*]

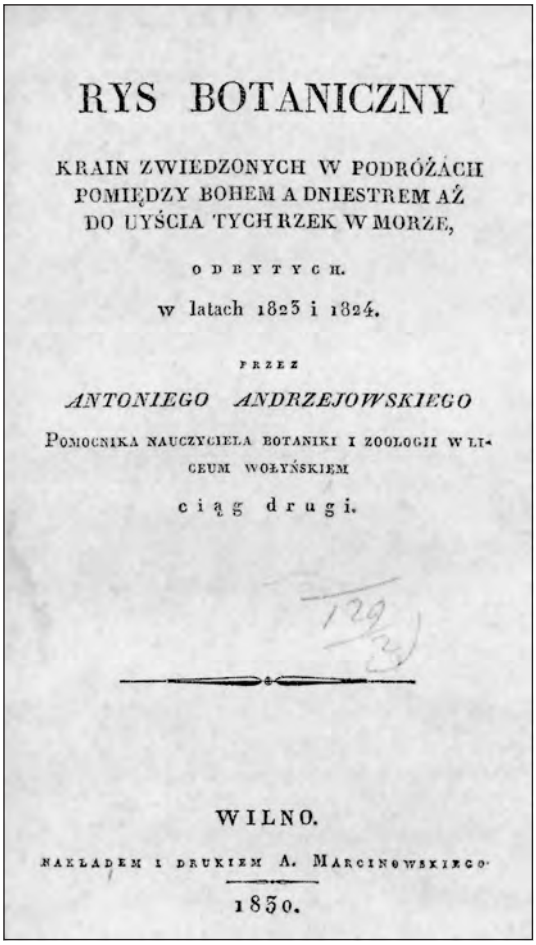
Hyla arborea (in the publication the genus *Hyla* is before *Rana* and in the manuscript it follows it)

Salamandra cristata [*Triturus cristatus*]

Salamandra marmorata [*Triturus cristatus*] (in the publication *S. marmorata* is presented before *S. cristata*)

Salamandra punctata [*Lissotriton vulgaris]*

Salamandra Lacepedii [*Lissotriton vulgaris*]



RYS BOTANICZNY

KRAIN ZWIEDZONYCH W PODRÓŻACH POMIĘDZY BOHEM A DNIESTREM AŻ DO UYŚCIA TYCH RZEK W MORZE,

ODBYTYCH.

w latach 1823 i 1824.

PRZEZ

ANTONIEGO ANDRZEJOWSKIEGO

POMOCNIKA NAUCZYCIELA BOTANIKI I ZOOLOGII W LICEUM WOŁYŃSKIEM

ciąg drugi.

WILNO.

NAKŁADEM I DRUKIEM A. MARCINOWSKIEGO.

1830.

Fig. 2. *Title page of Andrzejowski's 1830 book* Rys botaniczny krain zwiedzonych w podróżach pomiędzy Bohem a Dniestrem aż do uy cia tych rzek w morze, odbytych w latach 1823 i 1824 *in which the names of four of the five herpetological species he described were first published. Image from Polska Biblioteka Internetowa.*

Among the species considered to be new by Andrzejowski, *Coluber xanthogaster* and *Lacerta elegans* were synonyms of previously described species. A third new species, the steppe lizard, described in Polish without a Latin name in the manuscript, was probably omitted from the published paper because Andrzejowski ultimately realized that it was not distinct from what was then called *Lacerta deserti*. Andrzejowski's other descriptions, however, constituted the first application of names to the taxa involved, although for a variety or reasons, not all remain valid today. *Lacerta chersonensis* is a valid subspecies of *Lacerta agilis* (Kalyabina-Hauf and Ananajeva 2004). The description of *Anguis besseri* (today a subspecies of *Anguis fragilis*) likewise recognized a previously undescribed taxon, although the name was suppressed as a nomen oblitum under Opinion 642 (International Commission on Zoological Nomenclature 1962) and the later name *Otophis eryx* var. *colchica* Nordmann, 1840 is now regarded as the valid name for the eastern form of *Anguis fragilis* (Mertens and Wermuth 1960a, 1960b; Wermuth 1969). *Rana terrestris* was placed in the synonymy of *Alytes obstetricans* by Nikolsky (1905, 1918) but was regarded as valid by Taraszczuk (1959). However, subsequent authors (e.g. Szczerbak 1966; Kuzmin 1999) have acknowledged that Andrzejowski's name is a junior homonym of *Rana terrestris* Linnaeus, 1758 (= *Bufo terrestris*) and consider it to be an unavailable subjective senior synonym of *Rana arvalis* Nilsson, 1842.

Andrzejowski (1830) makes it clear that specimens of at least some of the species he described as new (e.g., *Coluber Xanthogaster*) were preserved, and it may be assumed that these were initially in the collection of the Lyceum of Volhynia, which was ultimately the core of the Zoological Cabinet of the University of St. Vladimir, and indeed, specimens of all of Andrzejowski's new species were present in that collection in 1832 (Andrzejowski 1839). Unfortunately, the fate of the types of these species is unknown and we could trace no subsequent citations of this material.

All five of Andrzejowski's new names were first proposed in manuscript form eight years before their official publication in the *Mémoires de la Société Imperiale des naturalistes de Moscou*. Further, all of the new names except *Rana terrestris*, were actually first published in Andrzejowski's botanical book two years prior to the journal publication. However, the 1830 usage of the names should be regarded nomina nuda, as no diagnostic information is presented. To our knowledge these names have never been attributed to the 1830 publication and even if validly described, would today be considered nomina oblita under Article 23.9.1 of the *International Code of Zoological Nomenclature* (1999).

In both the manuscript and the published paper of 1832, all the species listed are presented with a description, synonymy and information on the localities where they were found, with the vernacular names in Polish, Russian and often Ukrainian, and some ecological information regarding reproduction, food and habitat. The manuscript also contains several interesting reports about folkore related to reptiles and amphibians, such as the use of *Hyla arborea* for weather forecasting and popular and, according to Andrzejowski, effective remedies to treat viper bites using a preparation of *Thalictrum* (meadow-rue), mixed with fermented milk. Also related are the traditions of breeding and offering of cow's milk to *Natrix natrix* by peasants and the popular protection of this species based on old religious beliefs, as well as Andrzejowski's own 1805 adventure to a "haunted cellar" in the castle of Cepcewicze, where he discovered, instead of ghosts, a giant specimen of *Bufo bufo*.

Andrzejowski's manuscript is probably the first description of the herpetofauna of West and Central Ukraine and, with more than twenty names cited, it and the corresponding published

enumeration of the Ukrainian herpetofauna (Andrzejowski 1832) were relatively complete for their time. Of 20 species of Ukrainian amphibians recognized today, two salamanders and 10 frogs occur in the areas visited by Andrzejowski (Kuzmin 1999; Kurilenko and Vervec 1999) and all except *Rana ridibunda* were noted by him. Likewise, of 22 Ukrainian reptiles (Kotenko 2006), one turtle, six lizards and eight snakes occur in the regions described by Andrzejowksi (Taraszczuk 1959; Kurilenko and Vervec 1999; Szczerbak 2003); Andrzejowski (1832) recorded all of these except *Podarcis taurica*, *Natrix tesselata* and *Vipera renardi*.

Despite his thoroughness, Andrzejowski's contributions to herpetology have been largely forgotten, particularly outside Ukraine and Poland. In part this is due to his limited herpetological output and the fact that some of his contributions appeared in chapters in Polish language botany books (Andrzejowski 1823, 1830) that have remained largely unknown and inaccessible to most zoological workers. However, his obscurity has also been contributed to by the delayed publication of his recently discovered manuscript, which resulted in the appearance of more widely distributed and generally accessible — and thus more frequently cited — works (e.g., Eichwald 1829–1832, 1830; Pallas 1831; Dvigubsky 1832) near contemporaneously with his major treatise on the Ukrainian herpetofauna (Andrzejowski 1832).

Acknowledgements

We thank Professor Wanda Grębecka, through whose kindness we were able to obtain a copy of Andrzejowski's manuscript. Radek Tarkowski and Jadwiga Garbowska assisted in obtaining the portrait of Andrzejowski. The manuscript benefited from the comments of Richard Wahlgren and an anonymous reviewer.

References

Andrzejowski, A. 1823. Rys botaniczny krain zwiedzonych w podróżach pomiędzy Bohem i Dniestrem, od Zbruczy aż do Morza Czarnego, odbytych w latach 1814, 1816, 1818 i 1822. Nakładem i drukiem Józefa Zawadzkiego, Wilno [Vilnius]. viii + 127 pp.

Andrzejowski, A. 1825. Nauka wyrazów botanicznych dla łatwości determinowania roślin czyli zastosowania do nich opisów. Nakładem i drukiem N. Glücksberga, Krzemieniec-Warszawa. 310 pp

Andrzejowski, A. 1830. Rys botaniczny krain zwiedzonych w podróżach pomiędzy Bohem a Dniestrem aż do uyścia tych rzek w morze, odbytych w latach 1823 i 1824. Ciąg. 2. Nakładem i drukiem A. Marcinowskiego, Wilno [Vilnius]. vii + 93 pp.

Andrzejowski, A. 1832. Amphibia nostratia, seu enumeratio Sauriorum, Ophidiorum, nec non Sireniorum in excursionibus per Volhyniæ, Podoliæ Guberniumque Chersonense usque ad Euxinum observatorum. Nouveaux mémoires de la Société impériale des naturalistes de Moscou 2:319–346, pls. XXII–XXIV [the plates are incorrectly referred to as XXI–XXIII in the "explicatio tabularum". Kuzmin (1999) cites the title "Reptilia inprimis VolhyniÍ, PodoliÍ et gubernii Chersonensis", which appears on p. 319, the title cited here appears immediately above the text on p. 321].

Andrzejowski, A. 1839. Catalogue des objets qui se conservent dans le cabinet zoologique de l'Université Impériale de St. Vladimir à Kief. I^{ere} Parti: Mammifères, oiseaux, reptiles, poissons et crustacées. Bulletin de la Société impériale des naturalistes de Moscou. 1839:2–24 [Kuzmin (1999) incorrectly gives the pagination as 1–29].

Andrzejowski, A. 1861a. Ramoty starego Detiuka o Wołyniu. T. 1–2. Nakładem i drukiem A.H. Kirkora, Wilno [Vilnius]. 283 pp.

Andrzejowski, A. 1861b. Ramoty starego Detiuka o Wołyniu. T.3–4. Nakładem i drukiem A.H. Kirkora, Wilno [Vilnius]. 193 pp.

Andrzejowski, A. 1869. Flora Ukrainy, czyli opisanie roślin dziko rosnących w Ukrainie przeddnieprowej i w sąsiednich z nią okolicach Wołynia, Podola i guberni cherzońskich. W drukarni Słowa Polskiego, Warszawa. 94 pp.

Bayger, J.A. 1938. Obraz fauny płazów i gadów Polski z pierwszej połowy w. XVIII. Pp. 45–64 *in* Sprawozdanie Komisji Fizjograficznej obejmujace pogląd na czynno ci dokonane w

ciągu roku 1936 oraz Materiały do fizjografii kraju. Tom siedemdziesiąty pierwszy (LXXI). Nakładem Polskiej Akademii Umiejętności, Kraków.

Dvigubsky, I. 1832. Opyt Estestvennoi Istorii Vsekh Zhivotnykh Rossiiskoi Imperii 2(2): Gady, ili Zhivotnye Presmykayushchiesya [in Russian]. V Universitetskoi tipografii, Moscow. 48 pp.

Eichwald, [K.] E. 1829–1832. Zoologia Specialis quam Expositis Animalibus tum Vivis, tum Fossilibus Potissimum Rossiae in Universum et Poloniae in Specie 3. J. Zawadski, Vilnae [Vilnius]. 404 pp.

Eichwald, [K.] E. 1830. Naturhistorische: Skizze von Lithauen, Volhynien und Podolien in geognotisch-mineralogischer, botanischer und zoologischer Hinsicht. Auf Kosten des Verfassers. Gedruckt bei Joseph Zawadzki, Wilna [Vilnius]. 256 pp.

Fedorowicz, Z. 1966. Fauna Polski w dzielach o. Gabriela Rzaczynskiego T.J. (1664-1737) [La faune de Pologne dans les oevres de l'abbé Gabriel Rzaczynski]. Polskiej Akademii Nauk, Wrocław. 218 pp.

Feliksiak, S. (Ed.) 1987. Słownik biologów polskich. Państwowe Wydawn. Nauk, Warszawa 617 pp.

Frost, D.R., T. Grant, J. Favovich, R.H. Bain, A. Haas, C.F. Haddad, R.O. De Sa, A. Channing, M. Wilkinson, S.C. Donnellan, C.J. Raxworthy, J.A. Campbell, B.L. Blotto, P. Moler, R.C. Drewes, R.A. Nussbaum, J.D. Lynch, D.M. Green, and W.C. Wheeler. 2006. The amphibian tree of life. Bulletin of the American Museum of Natural History 297:1–370.

Georgi, J.G. 1775. Bemerkungen einer Reise im russischen Reiche im Jahre 1772. Bd. 1. Kayserl. Academie der Wissenschaften, St. Petersburg. [14] + 506 pp., IV folded pls.

Georgi, J.G. 1800. Geographisch-physikalische und naturhistorische Beschreibung des russischen Reiches zur Uebersicht bisheriger Kenntnisse von demselben. Theil 3, Bisher bekannt gewordene Thierarten. Band 6. Nicolovius, Königsberg. Pp. 1463–1677.

Grębecka, W. 2004. Atoni Andrzejowski (1785-1868). Pp. 412–421 *in* Makowski, S. (Ed.), Krzemieniec: Ateny Juliusza Sowackiego. Biblioteka Narodowa. Towarzystwo Literackie. Wydzia Polonistyki. Uniwersytetu Warszawskiego, Warszawa.

Grębecka, W. 2005. Botany in Krzemieniec: People, Teaching, Research work. Organon 34:51–72.

International Commission on Zoological Nomenclature. 1962. Opinion 642. Suppression under the plenary powers of eleven specific names of Reptilia and Amphibia with validation of thirteen specific names with their original author and date. Bulletin of Zoological Nomenclature 19:280–283.

International Commission on Zoological Nomenclature. 1999. International Code of Zoological Nomenclature, 4th ed. The Internationa[l] Trust for Zoological Nomenclature, London. xxix + 306 pp.

Kalyabina-Hauf, S.A. and N.B. Ananjeva. 2004. Phylogeography and intraspecies structure of wide distributed sand lizard, *Lacerta agilis* L., 1758 (Lacertidae, Sauria, Reptilia) (case study of mitochondrial cytochrome *b* gene) [in Russian]. Zoological Institute, Russian Academy of Sciences, St. Petersburg. 108 pp., 8 pls.

Kessler, K. 1850. Estestvennaya Istoriya Gubernii Kievskogo Uchebnogo Okruga: Zhivotnye Zemnovodnye. St. Vladimir University, Kiev. 94 pp.

Kessler, K. 1853. Estestvennaya Istoriya Gubernii Kievskogo Uchebnogo Okruga: Zhivotnye Zemnovodnye, 2nd ed. St. Vladimir University, Kiev. 94 pp.

Kotenko, T. 2006. Reptiles in the Red Data Book of Ukraine: a new species list, status categories, and problems arising from conservation legislation. Pp. 55–59 *in* Vences, M., J. Köhler, T. Ziegler and W. Böhme (Eds.), Herpetologia Bonnensis II. Proceedings of the 13th Congress of the Societas Europaea Herpetologica. Zoologisches Forschungsmuseum Alexander Koenig, Bonn.

Kremer, A. 1869. Zywoty przyrodników krajowych. Sprawozdania Komisji Fizjograficznej polskiej Akademii Umiejetnosci 3:157–161.

Kurilenko, V.E. and Yu. G. Vervec. 1999. Amphibians and Reptiles of the Fauna of Ukraine [in Ukrainian]. „Geneza", Kiev. 208 pp., 32 pls.

Kuzmin, S.L. 1999. The Amphibians of the Former Soviet Union. Pensoft, Sofia. vi + 538 pp.

Mertens, R. and H. Wermuth. 1960a. Application to suppress under the plenary powers eleven specific names of Amphibia and Reptilia and to validate thirteen names with their original author and date. Bulletin of Zoological Nomenclature 18:3–7.

Mertens, R. and H. Wermuth. 1960b. Die Amphibien und Reptilien Europas (Dritte Liste, nach dem Stand vom 1. Januar 1960). Verlag Waldemar Kramer, Frankfurt am Main. XI + 264 pp.

Nagy, Z.T., R. Lawson, U. Joger and M. Wink. 2004. Molecular phylogeny and systematics of racers, whip snakes and relatives (Reptilia: Colubridae) using mitochondrial and nuclear markers. Journal of Zoological Systematics and Evolutionary Research 42:223–233.

Nikolsky, A.M. 1905. Reptiles and amphibians of the Russian empire (Herpetologia Rossica) [in Russian]. Mémoires de l'Académie Impériale des Sciences de St.-Pétersbourg VIII[e] sér. 17(1):i–ii, 1–517, pls. I–II.

Nikolsky, A.M. 1915. Fauna of Russia and Adjacent Countries based principally on the collections of the Zoological Museum of the Imperial Academy of Sciences of Petrograd. Reptiles (Reptilia). Volume I. Chelonia et Sauria [in Russian]. Imperial Academy of Sciences, Petrograd. i–vi + i–iv + 532 + [2] pp., 9 pls.

Nikolsky, A.M. 1916. Fauna of Russia and Adjacent Countries based principally on the collections of the Zoological Museum of the Imperial Academy of Sciences of Petrograd. Reptiles (Reptilia). Volume II. Ophidia [in Russian]. Imperial Academy of Sciences, Petrograd. i–iii + 350, 8 pls.

Nikolsky, A.M. 1918. Fauna of Russia and Adjacent Countries based principally on the collections of the Zoological Museum of the Imperial Academy of Sciences of Petrograd. Amphibians (Amphibia) [in Russian]. Imperial Academy of Sciences, Petrograd. 311 pp, 4 pls.

Pallas, P.S. 1831. Zoographia Rosso-Asiatica, sistens omnium animalium in extenso Imperio Rossico et adjacentibus maribus observatorum recensionem, domicilia, mores et descriptiones, anatomen atque icones plurimorum. Volumen Tertium. Monocardia seu frigidi sanguinis Imperii Rosso-Asiatici. Supplendis quibusdam ranarum descriptionibus et iconibus inprimis piscium Camtschaticorum auxit et locupletavit Guil. Theophil. Tilesius. A.I.P.S.S. In officina Caes. Acadamiae Scientiarum Impress.,Petropoli. vii + cxxv + 428 pp., 6 pls.

Przybylski, R. 2003. Krzemieniec: opowieść o rozsądku zwyciężonych. Wydawnictwo, Warszawa. 201 pp.

Rzączyński, G. 1721. Historia Naturalis Curiosa Regni PoloniÍ: Magni Ducatus LitvaniÍ, Annexarumq[ue] Provinciarum, In Tractatus XX divisa: ex Scriptoribus probatis, servata primigenia eorum phrasi in locis plurimis, ex M.S.S. variis, Testibus oculatis, relationibus fide dignis, experimentis, Desumpta. Collegium Soc. Jesu, Sandomierz. [14] + 456 + [16] pp.

Rzaczynski, G. 1736. Auctarium historiae naturalis-curiosae regni Poloniae, magni ducatus Lituaniae, annexarumque provinciarum in puncta duodecim divisum. Preuss, Gedani [Gdansk]. [4] + 504 pp.

Strauch, A. 1873. Die Schlangen des russischen Reichs, systematischer und zoogeographischer Beziehung. Mémoires de l'Académie Impériale des Sciences de St.-Pétersbourg VII[e] sér. 21(4):1–288, pls. I–VI.

Stresemann, E. 1951. Date of publication of Pallas's 'Zoogeographia Rosso-Asiatica'. The Ibis 93:316–318.

Svetovidov, A.N. 1976. On the dates of publication of P. S. Pallas' "Zoographia Rosso-Asiatica" [in Russian]. Zoologicheskii Zhurnal 55:596–599.

Szczerbak, N.N. 1966. Amphibians and Reptiles of Crimea [in Russian]. Naukova Dumka, Kiev. 240 pp., 1 folding table, errata slip.

Szczerbak, N.N. 2003. Guide to the Reptiles of the Eastern Palearctic. Krieger Publishing, Malabar, Florida. xvii + 260 pp., 72 pp. pls.

Taraszczuk, V.I. 1959. Fauna of Ukraine. 7. Amphibians and Reptiles [in Ukrainian]. Academy of Sciences of the Ukrainian SSR, Kiev. 246 pp., 4 pls., errata slip.

Utiger, U., N. Helfenberger, B. Schätti, C. Schmidt, M. Ruf and V. Ziswiler. 2002. Molecular systematics and phylogeny of Old World and New World ratsnakes, *Elaphe* auct., and related genera (Reptilia, Squamata, Colubridae). Russian Journal of Herpetology 9:105–124.

Utiger, U., B. Schatti and N. Helfenberger. 2005. The oriental colubrine genus *Coelognathus* Fitzinger, 1843 and classification of old and new world racers and ratsnakes (Reptilia, Squamata, Colubridae, Colubrinae). Russian Journal of Herpetology 12:39–60.

Wendland, F. 1992. Peter Simon Pallas (1741–1811). Materialien einer Biographie. 2 vols. Walter de Gruyter, Berlin. XVIII + pp. 1–834; XII + pp. 835–1176.

Wermuth, H. 1969. Liste der rezenten Amphibien und Reptilien. Anguidae, Anniellidae, Xenosauridae. Das Tierreich 90:I–XIII, 1–41.

Žalūdienė, G. 2004. Vilniaus universiteto profesoriaus Eduardo Eichwaldo ekspedicija. Geologija 47:1–7.

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The Birth and Infancy of Herpetology. Part 2. From Natural to Modern Classifications.

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INTRODUCTION

How and why did naturalists of the past erect classes of reptiles and amphibians? In a previous paper, we described the very early days and the infancy of Herpetology. This second part deals with the period extending from the first authors to have devised a natural classification to the end of the birth of modern classifications towards the end of 19th century.

Alexandre Brongniart (1770-1847, Fig. 1) and the Natural Classification

If some wrote that the 18th century was the golden age of Natural History, we can say that the 19th century was the golden age of zoology, and that the Museum of Paris was its temple during the first half of the 19th century. Mayr (1982) wrote: "France, among the European countries perhaps the one least dominated by essentialism, clearly led in introducing the new methods of taxonomy". In this country, the French Revolution overthrew the institutions and new ideas arose. The King's Garden gave birth to the Museum of Natural History. An ever increasing and always keen audience raced to attend the lectures of new professors, such as Jean-Baptiste Lamarck (1749-1829), Etienne Geoffroy Saint Hilaire (1772-1844), René Desfontaines (1750-1833), Abbot René-Just Haüy (1743-1822), Antoine-François de Fourcroy (1755-1809), Antoine-Laurent de Jussieu (1748-1836), Bernard Germain Etienne Lacepède (1756-1825), and Georges Cuvier (1769-1832).

Since 1794, Lamarck had been teaching that a major dichotomy existed between the "Animals without vertebrae" and the "Animals with vertebrae" (he was the first to do it). These latter ones then included four classes: the Mammals (under the French name "*Mammaux*", plural of "mammal"), the Birds, the Reptiles and the Fishes. Immediately, Cuvier (1800, 1827) adopted this distinction and also taught it.

Fig. 1. *Alexandre Brongniart (1770-1847)*

Georges Cuvier introduced anatomy into zoology. In 1800, he expressed the famous "*Principe de la corrélation des Parties*" (Principle of the correlation of Parts) and the "*Principe de la subordination des caractères*", or Principle of the subordination of characters. These new views totally changed the very mind of the taxonomy. The relative importance of one character can change from a higher taxon to another. As a consequence, French zoologists tried to establish classifications

based on various characters, characters that, in turn, were taken into account upon their sole ability to define apparent natural groups. In contrast to the artificial method of Linnaeus, the natural method did not accept anything arbitrary: "This combination of living beings by groups or by families appears to indeed exist in the nature; it just remains to be discovered" (Brongniart, 1805). The genus, which was the centre of universe in the Linnaean system and Aristotle's logic, was considered now like a mere higher collective category. The family became the most stable unit of classification (Mayr, 1982). Cuvier demonstrated that there was no single organizational scheme, but indeed four schemes and therefore four well distinct embranchments: Vertebrates, Articulates, Radiates and Zoophytes.

On 1st pluviose An 8 (20th January 1800 of the French republican calendar), citizen Brongniart, then young Director of the porcelain Factory of Sèvres (*Manufacture de Sèvres*, near Paris), co-founder of the *Société Philomatique of Paris*, mineralogist at the *Muséum d'Histoire naturelle de Paris* (Paris Museum Natural History), read in the National Institute (Academy of Sciences) a memoir of 53 pages entitled: "*Essai d'une classification naturelle des Reptiles*" (Essay on a natural classification of Reptiles) before a prestigious and learned audience which included Lacepède, Cuvier, Lamarck, etc. This memoir is the founding text of herpetology. A summary was published immediately after in numbers 35 and 36 of the *Bulletin des Sciences of the Société Philomatique of Paris*. It was not published in full until the end of 1805 (prairial An XIII) for the separates, and January 1806 in the *Mémoires de l'Institut*. Brongniart was definitely not a neophyte in zoology. He was well versed in entomology and dissected reptiles and amphibians with his friends Georges Cuvier and André Marie Constant Duméril. His memoir is a vigorous plea for the defence of the natural method, to such an extent that Cuvier, associating with Lacepède, supported this application of the natural method in one of the next meetings of the Institute.

Brongniart rejected all previous classifications that were "contrary in whole or in part to the natural order". He adhered rigorously to the natural method and combined "the animals that show affinities by their main organs, namely by those which provide very important characters such as the organs of the blood circulation, of breathing and of generation, as we can see in Birds". He went on to state that: "According to these principles, let us examine how reptiles can differ between them, and if they do not present differences more important than the presence or the absence of a tail or even feet in their heart, in their generation, and in their development". Quite rightfully, he stated convincingly later that: "reproduction organs and the way in which reproduction is accomplished show much more essential differences".

From these characters, it seems obvious to Brongniart "that Nature created Frogs and Salamanders on the same model, very different from the scheme which led to the Lizards and Snakes, and thus, if one wants to obey the laws established by Nature, reptiles should be split into two divisions, regardless of the presence of tail or feet. The first division includes Tortoises, Crocodiles, Lizards and Snakes, and the second one, the Salamanders, Frogs, Toads, and so on."

"In placing these latter animals at the end of Reptiles, we can establish a much better natural transition between them and Fishes, than that, alleged by several naturalists, in which the transition between Reptiles and Fishes was done by the Snakes on the one hand, and the Apod Fishes on the other hand. This apparent transition is based only on some parts of little importance, such as the feet. In contrast, the relationships binding Frogs and Salamanders to the Fishes are much more powerful, because in the early stages of their life, these Reptiles are almost Fishes".

Brongniart (1800, 1805) divided the class of Reptiles into four orders: the Chelonians, the

Saurians, the Ophidians and the Batrachians. The Chelonians include the genera *Chelone*, *Emydes* (added in 1805) and *Testudo*, the Saurians the genera *Crocodylus*, *Iguana*, *Draco*, *Stellio*, *Gecko*, *Cameleo*, *Lacerta*, *Scincus*, and *Chalcides*, the *Ophidia* the genera *Anguis*, *Amphisbaena*, *Crotalus*, *Vipera*, *Coluber*, *Boa* and *Caecilia*, and the Batrachians the genera *Rana*, *Bufo*, *Hyla*, and *Salamandra*.

Brongniart is therefore the first one to have removed the Urodela, namely the salamanders, from the lizards and to place them in Batrachians along with the Anurans. He wrote: "The *Lacerta vulgaris, japonica, quadrilineata* and *punctata*, placed by Gmelin (1789) in the division of Lizards proper, are indeed Salamanders". He placed the *Chalcides* in the Saurians, as, besides legs, he observed in them two auricles in the heart and a sternum. In contrast, he still left in snakes the slow-worm (*Anguis*), the Amphisbaenas and, with some doubt, the *Caecilia*. The French zoologists accepted immediately the classification of Brongniart.

At the beginning of the 19th century, there was in France an incredible herpetological output. In 1800, Pierre-André Latreille (1762-1833), entomologist in the Museum of Paris, published a "*Histoire naturelle des Salamandres de France précédée d'un tableau méthodique des autres reptiles indigènes*" (Natural history of the salamanders of France, preceded by a methodical table of other indigenous reptiles) (read in the National Institute in 1797). This small book included the first description of *Triturus marmoratus* and it was the first monograph on the herpetofauna of France. In 1800 were also published the first two volumes of Cuvier's "*Leçons d'Anatomie Comparée*" (Lessons of comparative anatomy), written by Duméril, and the first two livraisons of a "*Histoire naturelle des Quadrupèdes ovipares*" (Natural history of oviparous quadrupeds) by François-Marie Daudin (1774-1804), a book published later under another title. In these livraisons, purchased by subscription, appeared for the first time the French word "*Rainette*", which designated the genus *Hyla* in place of the word "*Raine*" of Daubenton (1784), Lacepède (1789), Brongniart (1800, 1805) and Latreille (1800). In 1801, a "*Histoire naturelle des Reptiles*" (Natural history of reptiles), in four volumes, by Charles Sonnini de Manoncourt (1751-1812) and Latreille, with Latreille as main author, was published in a series edited by Sonnini de Manoncourt as a continuation of Buffon's work.

In February 1803, Daudin published "*Histoire naturelle des Rainettes, des Crapauds et des Grenouilles*" that follows exactly the typographical format of the first two livraisons of 1800 of the "*Histoire naturelle des Quadrupèdes ovipares*". Daudin modified his title because he read or heard of Brongniart (1800). Daudin's opus was the first general book on Anurans. Before it, there had been the wonderful *Historia naturalis Ranarum nostrarum*" (1753 to 1758) by August Johann Rösel von Rosenhof (1705-1759), but it included only German Anurans. From August 1802 to August 1803, Daudin also published a "*Histoire naturelle, générale et particulière des Reptiles*" in eight volumes. In 1806, Duméril published his "*Zoologie analytique*", a summary of his lectures in which the whole of the Animal kingdom is detailed in synoptic tables.

In 1807, Cuvier published his memoir entitled "*Recherches anatomiques sur les reptiles regardés encore comme douteux par les naturalistes, faites à l'occasion de l'axolotl rapporté par M. Humboldt du Mexique*" (Anatomical researches on the reptiles still considered dubious by the naturalists, realized on the occasion of the collection in Mexico of axolotl brought back by M. Humboldt). It was read to the National Institute on 19th and 26th January 1807. Cuvier revealed there the results of his investigations on specimens of *Siren lacertina*, axolotl and *Proteus anguinus.* He concluded that the axolotl is the larva of an unknown large salamander and the *Siren* and the *Proteus*, having together lungs and gills, are not fish or tadpoles but ought to be placed

within the salamanders in a peculiar genus of Batrachians.

All these French authors adopted the classification of Brongniart (1800, 1805) in four orders, with the exception of Sonnini and Latreille (1801) who still followed the classification of Lacepède (1788, 1789), although they took into account Brongniart's (1800) modifications.

Michael Oppel (1782-1820) and Henri Marie Ducrotay de Blainville (1777-1850, Fig. 2)

Between 1806 and 1809, four German students, Johann Baptist von Spix (1781-1826), August Schweigger (1783-1821), Michael Oppel and Carl or Karl Ludwig Friederich von Roser (1787-1861) were sent to Paris by the King of Bavaria or, for Schweigger, by the minister of Prussia Stein von Altenstein (Bour & Uhl, 2001), in order to study Natural history in the *Muséum d'Histoire naturelle* (Blainville, 1839; Duméril & Bibron, 1834: p. 258). Spix studied anatomy; Schweigger had to take care of botany and zoology, whereas Oppel was sent as an artist. Roser most probably studied entomology, as he eventually became an entomologist in Stuttgart where his collection was deposited. They were mentored in Paris by Alexander von Humboldt (1769-1859), who perhaps arranged their travel to Paris. Along with Blainville, they attended all lectures of Cuvier and Duméril. The latter strongly encouraged Schweigger and Oppel, and made their researches on Reptiles easier. Then, Oppel, probably as a thesis or a memoir concluding his studies, conceived the project of establishing a natural history of Reptiles, following the natural history of Chelonians prepared by his colleague Schweigger. Ducrotay de Blainville joined him for this work.

In this memoir entitled "*Sur la Classification des Reptiles*", Oppel stated that Blainville undertook the anatomical part of his memoir, directed his researches and checked the results (Oppel, 1811a-b-c; Blainville, 1839). Oppel gathered the Saurii and the Ophidii, second and

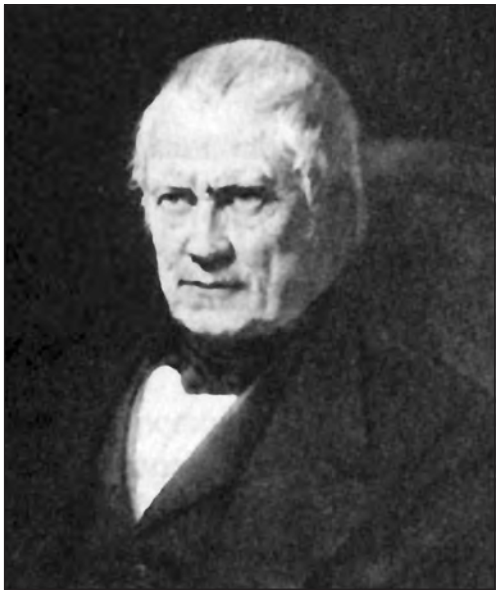

Fig. 2. *Henri Marie Ducrotay de Blainville (1777-1850)*

third order of Brongniart, into a single order, the Squamata, and gave to his third order the name of Nuda, after Klein (1755), or Batracii, following Brongniart. He divided it into three families: the Apoda, the Ecaudata and the Caudata.

The new family of Apoda, containing only the genus *Caecilia*, was defined as: "*Corpore nudo, glutinoso, elongate, pedibus carente*". Even if Oppel (1811c) took advantage of the lectures and Duméril's (1806) book and of the advice of his friend Blainville, who had drawn the anatomy of two Caecilians in 1807, he became the first zoologist to have removed the Caecilians from the Snakes, and to have placed them into the Batrachians with a familial rank (Lescure, 1986).

On 11th November 1839, Duméril read to the Academy of Sciences of Paris a "Mémoire sur la classification des Ophiosomes ou Céciloïdes, Famille des Reptiles qui participant des Ophidiens et des Batraciens, relativement à leur organisation" (Memoir on the classification of the Ophiosomes or Ceciloïds, Family of Reptiles, part of Ophidians and Batrachians

according to their organization). He announced that, in the eighth volume of "Erpetologie Générale", then in press, M. Bibron and he established in Batrachians a first suborder, the Péromèles, constituted by the Family of Ophiosomes [Caecilians] that regrouped four legless genera: *Caecilia, Siphonops*, *Epicrium* and the new *Rhinatrema*. This communication led to a strong controversy between Duméril and Blainville. During the same meeting, this latter author declared that he was delighted that M. Duméril eventually managed to place Caecilians within the Batrachians. However, he believed that Duméril granted him too small a part of the scientific effort which led him to this result. During the next meeting of Academy of Sciences, held on 29th November, Blainville presented to his colleagues of the Academy, including Duméril, the arguments supporting his statement of the precedent meeting in a communication entitled "*Notice historique sur la place assignée aux Cécilies dans la série zoologique*" (Historical report on the place given to Caecilians in the zoological classification). Happy times, when the scientists of the Academies of Sciences in the world had to feud about taxonomical problems!

Chalcides and the Caecilians no longer had their place within the Snakes. Schneider (1801), Brongniart (1800, 1805), Sonnini & Latreille (1801), Daudin (1803) and Duméril (1806) still classed *Anguis* and *Ophisaurus* in the Ophidians. Oppel (1811a-b-d) was again the first to write that the slow-worms and the ophisaurs were Saurians, because they have a sternum. At the same time, he reported that Duméril said that in "the past year's lecture". However, along with Blainville, he checked their affinities with the lizards through an anatomical examination of their skeletons. Blainville stated again in 1816 that the slow-worms are genuine lizards. Most herpetologists, especially the German colleagues of Oppel, accepted these modifications but often placed the anguids in an additional order between the Saurians and the Ophidians, or in a peculiar tribe in the order Squamata. As a consequence, Merrem (1761-1824) erected a tribe Repentia for the *Acontia* (scincids) and the Hyalins (equivalent to the Ophisaurs) (Merrem, 1820). Meanwhile, John Edward Gray (1800-1875) created the order of the Saurophidians (Gray, 1825), in which he placed the Scincoidians, Anguids, Typhlopids, Amphisbaenas and Chalcidians.

However, classifying the Crocodilians within the Saurians made for a problem. Blainville (1816) was the first to remove the Crocodilians out of the Saurians and to place them in their own order, the Emydo-Sauriens, between the Chelonians and the Saurophians (equivalent to the Squamata). Merrem (1820) with his Loricata, Gray (1825) with the name Emydosaurians and Wagler (1800-1832) with the Crocodilii (Wagler, 1830) rightly continued in this same way. However, Duméril & Bibron (1836) still considered them to be a family, although somewhat peculiar, of the order Saurians.

Another problem comes back from time to time in the classifications, namely the right position to be given to *Proteus anguinus* and *Siren lacertina* (or Perennibranchia). The old concept of the order Meantes was resurrected from time to time. Blainville (1816) and Gray (1825) added an order to accommodate the Perennibranchia in their class Amphibia. Quite recently, Goin (1962) and Goin et al. (1978) proposed to remove the Sirenidae out of Urodela and to create a peculiar order, the Trachystomata. Wake (1966), Edwards (1976) and Estes (1981) showed that the Sirenidae should indeed be kept in the Urodela. The genera *Proteus* and *Siren* constitute two different families within the Urodela: the Proteidae and the Sirenidae, placed in two distinct suborders, Sirenoidea and Proteidea, according to Laurent (1985), or in the suborder Sirenoidea and the family Proteidae of the suborder Salamandroidea according to Duellman & Trueb (1986).

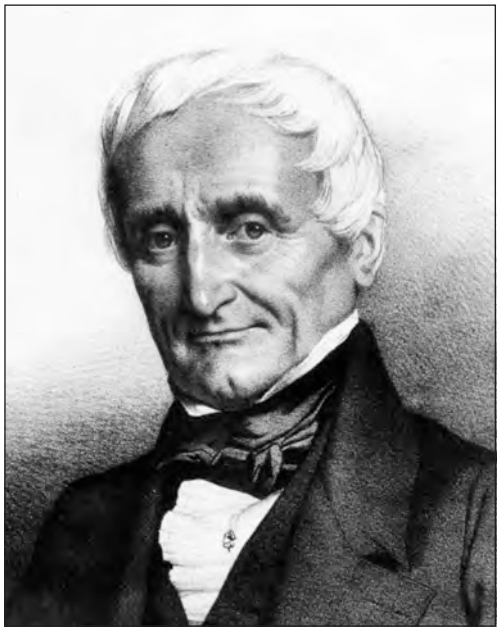

Fig. 3. *André Marie Constant Duméril (1774-1860)*

Fig. 4. *Gabriel Bibron (1806-1848).*

To be or not to be a Class?

It is unfortunate that Oppel (1811a, b, c, d, e), perhaps under the influence of Duméril, did not make a distinct class of Batrachia or Amphibia alongside of Reptiles, like his friend Blainville advised him strongly to do. Blainville, more bold, took this the step in 1816. So, he was the first to separate Amphibians and Reptiles and to place them into two distinct classes, under the now forgotten names "Nudipellifères" for the Amphibians and "Squammifères" for the Reptiles, respectively. Merrem (1820), who was aware of the works of Oppel (1811e) but not of Blainville's (1816) one, published as a short note in two parts in a journal probably not widely available, reached the same conclusions: a class of Reptilia and a class of Amphibia. The division into two classes, after Blainville, was followed by Latreille (1825), Adrian Hardy Haworth (1767 or 1768 – 1833) (1825), John Hogg (1800-1869) (1839) and Charles-Lucien Bonaparte (1803-1857) after 1850, but not by Cuvier (1829), Wagler (1830), Bonaparte (1831, 1839) and, above all, not by Duméril & Bibron or Duméril, Bibron & Duméril (1834-1854).

André Marie Constant Duméril (1774-1860, Fig. 3)

In 1803, André Marie Constant Duméril, friend of Cuvier and Brongniart, was named substitute professor for Lacepède in the Professorship of Reptiles and Fishes of Museum d'Histoire naturelle de Paris. He became full professor thereof in 1825, after the death of Lacepède. From 1803 to 1853, therefore for fifty years, Duméril taught and lectured on Reptiles in the Museum of Paris.

In 1833, with the help of Gabriel Bibron (1806-1848, Fig. 4), who had been his "Aide-Naturalist" (assistant to the Professor) for one year, Duméril undertook a huge task, which resulted in the publication, between 1834 and 1854, of the "*Erpétologie Générale ou Histoire naturelle complète des Reptiles*". This series included nine volumes, the 7th one being divided into two parts, plus an atlas of 120 plates (plates 1-108, plus plates 39bis, 41bis, 75-84bis). After the death of Bibron, Duméril benefited from the help of his son Auguste in completing volumes VII and IX. This mammoth work contains the detailed description of 1311

Amphibians or Reptiles species, whereas the books of Lacepède (1788, 1789), Daudin (1802-1803) and Merrem (1820) encompassed only 292, 556 and 580 species respectively. In the Erpétologie Générale, the Caecilians were removed from the Ophidians and included in the Batrachians, whereas the Scincidians, Anguians and the Amphisbaenas were also removed from the Ophidians and placed in the Saurians. No later herpetologist will again classify these groups within the Ophidians.

Duméril had the largest herpetological collection of the time in the world under his responsibility. His reputation was such that the herpetologists of British Museum even sent him some specimens collected by Charles Darwin (1809-1882) to describe and include them in the "Erpétologie Générale" (Lescure, 1990). He updated the classification of the Snakes based on the number, shape and morphological modifications of teeth and fangs (Duméril, 1852). He detailed in an objective way the works published before him, prepared excellent conspectus and definitions of the groups (orders, families, genera). However, it was by far his rigorous, clear and meticulous descriptions (written of course by Bibron), which avoided the verbose, imprecise or too concise style of his predecessors, that made him the Father of Herpetology. This title was awarded to him by his contemporaries on his grave (Flourens, 1863). With Duméril and Bibron, a science named Herpetology was born and even grew out of its infancy.

However, Duméril was too conservative or too cautious, and did not have the audacity of Ducrotay de Blainville. Or, perhaps did he want to not offend Brongniart? Nevertheless, he eventually followed the already out of date classification of Brongniart (1800), namely a single class of Reptiles divided into four orders, Chelonians, Saurians, Ophidians and Batrachians. He always stuck faithfully to this scheme. In the first volume of the series, published in 1834, Duméril discussed the generalities of herpetology and his predecessors. He mentioned Blainville (1816), Merrem (1820), Latreille (1825), Gray (1825) and Haworth (1825), who all conceived or adopted the two classes, but did not make any comment on this subject. In the eighth volume, dealing with the Batrachians (1841), he wrote without other comment: "The fourth order of the class of Reptiles... is so distinct and different from the three other ones that several authors proposed to place them into a distinct class with its own name". But he did not take any action, not even recognizing a subclass as did Fitzinger (1826). Perhaps Duméril did not recognize this category? Duméril also maintained the crocodiles in the Saurians and did not create for them their own order. The classification of his colleague and friend Brongniart (1800) asserted itself in France with such evidence and such swiftness that it perhaps too much influenced Duméril and prevented him to assimilate the last decisive progress of herpetology. In other words, Brongniart's influence may have kept Duméril from building the "definite" frameworks of herpetology. During fifty years in the Museum of Paris, namely from 1803 to 1853, Duméril would constantly teach the same classification of Reptiles! In 1854, when the last volumes of the "Erpétologie Générale" were published, he was already 80 years old. Failing to recognize two classes was really a great mistake for a great herpetologist such as André Marie Constant Duméril.

The division in two classes will be accepted by all herpetologists towards 1860. Auguste Duméril (1812-1870), the son and successor of André Marie Constant in the Museum of Paris, will accept it in 1863, namely after the death of his father. However, the Zoological Record, which records yearly all zoological publications, will not distinguish the Batrachia class as distinct from the Reptilia class before 1880, namely when Boulenger began to assume the compilation of its herpetological part. Another period of herpetology was born...

DISCUSSION

The birth of herpetology may be considered an example of the evolution of a discipline of zoology. It progresses slowly in a linear, step-by-step manner, seldom in an explosive way, but nevertheless advances steadily. The history of herpetology was marked in its beginnings by some decisive steps. However, these were often suggested and announced by some previous authors. For example, Brongniart (1800) was the first to lay the bases of the classification of Reptiles and Amphibians in removing the Urodela out of Lizards and in associating them with Anurans to create the Batrachians. However, Hermann (1783) already compared salamanders with frogs. Oppel (1811a, b) conceived the Squamata, removed the Caecilians from the Ophidians and included them in the Batrachians, thus completing and achieving the structure of this order. He was largely inspired by the lectures of Duméril and was encouraged by Blainville. The way of progressing by small steps is normal in a science such as the herpetology, because Reptiles and Amphibians are not "natural" genera (*sensu* Aristotle), in contrast to Birds and Fishes, recognized readily by everybody, or to Mammals or Insects at least recognized by all naturalists.

Since its birth and childhood, the taxonomy of amphibians and reptiles has greatly progressed. It may look like a paradox, but the class Amphibia, the most recent one, changed the least. It includes fossil forms and all actual amphibians, or Lissamphibians, still divided into three orders: Gymnophiona (= Apoda), Urodela and Anura. The Lissamphibia constitute a monophyletic group (Rage & Janvier, 1982) and therefore Urodela and Anura did not evolve from two different groups of fish, as suggested by some researchers (Jarvik, 1942, 1980). All tetrapods, and consequently all Amphibians, are issued from a single common ancestor, a "Crossopterygian" Fish rhipidistian of the "Osteolepiforms" group (Rage, 1985).

The class of Reptiles was subject to many more evolutions. A discussion on this subject is beyond the scope of this paper. We will just mention that the order of Squamata was progressively recognized by all naturalists, a position that made it easier for some herpetologists to move the Amphisbaenians out of the Ophidians. Currently, Saurians are considered a paraphyletic group. Lastly, the examination of *Sphenodon punctatus* of New Zealand, discovered and described after the publication of the volumes on Saurians of the "Erpétologie Générale" (Duméril & Bibron, 1836, 1837), demonstrated that this animal constitutes itself a distinct order of reptile, the Rhyncocephalia (Günther, 1868) or Sphenodontia, a more appropriate name according to palaeontologists (Rage, 1992).

Eventually, the discovery and the study of numerous fossils brought new problems to the classification of reptiles. The examination of the temporal region (Osborn, 1903, Williston, 1925), particularly its apertures, different from one group to another, gave some criteria for classification which are still used: Anapsid (temporal region without aperture), Synapsid (one temporal aperture) and Diapsid (two apertures). However, the phylogenetic value of this character was recently contested.

Do reptiles still exist? Progress in phylogenetic classifications pushed cladists to not recognize a class *Reptilia*. Lecointre & Le Guyader (2001) pointed out that the "Reptiles" should no longer exist any more because they do not constitute a monophyletic, but a paraphyletic group. The Reptiles have a common ancestor, that of Amniota, but, in their traditional definition, do not include all its descendants, like the mammals, issued from Synapsids, and the birds, issued from Dinosaurs, the sister group of Crocodilians. So, most recent phylogenetic studies accept the taxon Reptilia, which, besides the traditional reptiles, also include birds and dinosaurs. We are far from Aristotle's natural groups.

CONCLUSION

The founders of the Herpetology are indeed Brongniart, Oppel, Blainville, and Duméril & Bibron. Brongniart (1800) wrote the founding text of herpetology. Oppel wrote very rightly: "with Brongniart, a new time began for the Natural History of Reptiles". Oppel (1811a-b-c-e) conceived the Amphibians as recognized today.

At the summit of this pyramid of taxonomic progress, Duméril rightfully deserves his title of "Father of Herpetology". In his monumental "Erpétologie Générale", published with Bibron over twenty years, he structured genera, families and orders of Reptilia and Amphibia, especially the Saurians and Ophidians. We can, however, regret his lack of insight in not recognizing a peculiar order for the Crocodilians, and, above all, a distinct class for the Batrachians. Blainville had these intuitions and had the talent to be the first to state these differences. Duméril did not follow them. At the same time, several young, talented herpetologists from the United Kingdom, Belgium, Germany and the young United States of America began to rise along the slopes of Duméril's pyramid, whatever was his highness, and would very soon open a new era in Herpetology.

Acknowledgements

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References

Blainville, Henri Marie Ducrotay de. 1816. Prodrome d'une nouvelle Distribution systématique du Règne animal. Bull. Sci. Soc. Philom. Paris 1816: 105-112 & 121-124.

Blainville, Henri Marie Ducrotay de. 1839. Notice historique sur la place assignée aux Cécilies dans la série zoologique. C.R. Acad. Sci. Paris, 9(22): 663-675.

Bonaparte, Charles Lucien. 1831. Saggio di una distribuzione methodica degli animali vertebrati a sangue fredo. Boulzaler, Rome. 86pp.

Bonaparte, Charles Lucien. 1839. Amphibia europaea ad systema nostrum vertebratorum ordinate. Mem. Real. Acad. Sci. Torino (2), 2. 385 pp.

Bonaparte, Charles Lucien. 1850. Conspectus systematum Herpetologiae et Amphibiologiae. Brill, Lugduni batavorum. 1 plate.

Bour, Roger & Uhl, Marie-Noëlle. 2001. August Friedrich Schweigger (1783-1821). In: Rieck, Werner, Hallmann, Gerhard & Bischoff, Wolfgang (Eds.), Geschichte der Herpetologie und Terrarienkunde im Deutschsprachigen Raum. D.G.H.T., Rheinbach, Mertensiella 12: 595-601.

Brongniart, Alexandre. 1800. Essai d'une classification naturelle des reptiles. Bull. Sci. Soc. Philom. Paris 2: 81-82 & 89-91.

Brongniart, Alexandre. 1805. Essai d'une classification naturelle des reptiles. Beaudoin, Paris. 53 pp., 2 plates.

Cuvier, Georges. 1800. Leçons d'Anatomie Comparée de Georges Cuvier recueillies et publiées par M. Duméril. Beaudoin. Paris, 2nd ed. Vol. I. 520 pp.; Vol. II, 597 pp.

Cuvier, Georges. 1807. Recherches anatomiques sur les reptiles regardés encore comme douteux par les naturalistes, faites à l'occasion de l'Axolotl rapporté par M. de Humboldt du Mexique. Haussman, Paris. 47 pp., 4 plates.

Cuvier, Georges (*Chevalier* / Knight). 1817. Le règne animal distribué d'après son organisation. Vol. II. Déterville, Paris. 532 pp.

Cuvier, Georges (Baron). 1829. Le Règne animal distribué d'après son organisation. 2nd ed. Vol. II. Déterville, Paris. 121 pp.

Daubenton, Louis Jean-Marie. 1784. Encyclopédie méthodique. Histoire naturelle des Animaux. Tome 2, Les Animaux quadrupèdes ovipares et les Serpens. Panckouke, Paris and Liège. Pp. 547-712.

Daudin, François Marie. 1800. Histoire naturelle des Quadrupèdes ovipares. 1e et 2e livraisons. Fuchs et Delalain, Paris. 24 pp, 12 plates.

Daudin, François Marie. 1803a. Histoire naturelle des Rainettes, des Grenouilles et des Crapauds. Levrault, Paris. In-4° ed. 108 pp., 38 plates.

Daudin, François Marie. 1801-1803b. Histoire naturelle, Générale et particulière des Reptiles; Ouvrage faissant suite à l'Histoire Naturelle générale et particulière, composée par Leclerc de Buffon, et rédigée par C. Sonnini, membre de plusieurs Sociétés savantes. 8 volumes. Dufart, Paris.

Duellman, William E. & Trueb, Linda. 1986. Biology of Amphibians. McGraw-Hill, New York. 670 pp.

Duméril, André Marie Constant. 1806. Zoologie analytique, ou Méthode naturelle de classification des Animaux. Allais, Paris. 345 pp.

Duméril, André Marie Constant. 1839. Mémoire sur la classification des Ophiosomes ou Cécilioïdes, Famille des Reptiles qui participent des Ophidiens et des Batraciens, relativement à la forme et à l'organisation. C.R. Acad. Sci., 9(20): 581-587.

Duméril, André Marie Constant. 1852. Prodrome de la classification des Reptiles Ophidiens. Tiré-à-part. 136 pp., 2 plates.

Duméril, André Marie Constant & Bibron, Gabriel. 1834-1844. Erpétologie générale ou Histoire naturelle complète des Reptiles. Roret, Paris. Vol. I, 1834: xxiv + 447 pp.; Vol. II, 1835: ij + 680 pp, 2 folding tables.; Vol. III, 1836: iv + 517 pp., 2 folding tables; Vol. IV, 1837: ij + 571 pp., 1 folding table; Vol. V, 1839: viij + 854 pp., 3 folding tables; Vol. VI, 1844: XII + 609 pp., 2 folding tables; Vol. VIII, 1838: 1-290, 1841: ii + 291-792.

Duméril, André Marie Constant, Duméril, Auguste & Bibron, Gabriel. 1854. Erpétologie générale ou Histoire naturelle complète des Reptiles. Librairie Encyclopédique de Roret, Paris. Vol. VII. Tome 1: pp. vii + Notice sur G. Bibron (4 unnumbered pages) + XVI +1-780, 1 folding table; Tome 2: pp. XII + 781-1556, 1 folding table; Vol. IX: XX + 440 pp., 1 folding table; Atlas: 24 pp., 1 portrait, 120 plates.

Duméril, André Marie Constant & Duméril, Auguste. 1851. Catalogue méthodique de la collection des Reptiles. Gide & Baudry, Paris. 224 pp.

Duméril, Auguste. 1863. Catalogue méthodique de la collection des Batraciens du Muséum d'Histoire naturelle de Paris. Mém. Soc. Imp. Sci. Nat. Cherbourg. 9: 293-321.

Estes, Richard. 1981. Gymnophiona. Caudata. Handbuch der Palaeoherpetology. Gustav Fisher, Stuttgart. 2. 115 pp.

Fitzinger, Leopold Joseph Franz Johann. 1826. Neue Classification der Reptilien. Heubner, Wien. 128 pp.

Flourens, Pierre Jean Marie. 1863. Eloge historique d'André-Marie-Constant Duméril lu dans la séance publique du 28 décembre 1863. Institut Impérial de France. Firmin Didot, Paris. 24 pp.

Gmelin, Johann Friedrich. 1789. Caroli a Linné Systema Naturae per Regna Tria Naturae, Secundum Classes, Ordines, Genera, Species; cum Characteribus, Differentiis, Synonymis, Locis. Tomus Primus. Editio decima tertia, aucta, reformata. Tom. I. Pars III. G. E. Beer, Lipsiae [Leipzig]. Pp. 1033-1516.

Goin, Coleman Jett & Goin, Olive Lynda. 1962. Introduction to herpetology. Freeman, San Francisco. 341 pp.

Goin, Coleman Jett, Goin, Olive Lynda & Zug, George Q. 1978. Introduction to herpetology. Freeman, San Francisco. 378 pp.

Gray, John Edward. 1825. A synopsis of the genera of Reptiles and Amphibians, with a description of some new species. Ann. Philo. (New ser.) 10: 193-217.

Günther, Albert Carl Ludwig Gotthilf. 1868. A contribution to the Anatomy of Hatteria (*Rhyncocephalus* Owen). Philos. Trans. 157: 595-629.

Haworth, Adrian Hardy. 1825. Amphibiorum conspectus dichotomus. Phil. Mag. 565: 372-373.

Hermann, Jean. 1783. Tabulae affinitatum animalium, olim academico specimine edita, nunc uberiore commentario illustrata cum annotationibus ad historiam naturalem animalium augendam facientibus. Joh. Georgii Treuttel, Argentorati (Strasbourg). 370 pp., 3 tables.

Hogg, John. 1839. On the classification of the Amphibia. Mag. Nat. Hist. (n. s.) 3: 265-274 and 367-378.

Jarvick, Erik. 1942. On the structure of the snout of Crossopterygians and lower Gnathostomes in general. Zool. Bidr. 21: 235-675.

Jarvick, Erik. 1980. Basic structure and evolution of Vertebrates. Academic Press, London. Vol. 2. 338 pp.

Lacepède, Bernard Germain Etienne, 1788. Histoire Naturelle des Quadrupèdes Ovipares et des Serpens. Tome Premier. Hôtel de Thou, Paris: 17 + 651 pp., Table, Pls. 1-41, 2 folding tables.

Lacepède, Bernard Germain Etienne, 1789. Histoire Naturelle des Serpens. Tome Second. Imprimerie du Roi, Hôtel de Thou, Paris: 8 + 19 + 144 + 527 pp., Pls. 1-22.

Latreille, Pierre-André. 1800 [An VIII]. Histoire naturelle des Salamandres de France, précédée d'un Tableau méthodique des autres reptiles

indigènes: avec figures coloriées. Imprimerie de Crapelet, Paris: xlvii + 61 pp., Pls. 1-6.

Latreille, Pierre-André. 1825. Familles naturelles du Règne animal. Baillère, Paris. 570 pp.

Laurent, Raymond François. 1985. Sous-classe des Lissamphibiens (Lissamphibia), Systématique. *In*: Grassé, Pierre-Paul & Delsol, Michel (Eds.) Traité de Zoologie. Vol. XIV, Amphibiens. Masson, Paris. Fasc. I-B: 594-797.

Lecointre, Guillaume & Le Guyader, Hervé. 2001. Classification phylogénétique du vivant. Belin, Paris. 543 pp.

Lescure, Jean. 1986. Histoire de la classification des Cécilies (Amphibia, Gymnophiona). Mém. Soc. Zool. France 43: 11-19.

Lescure, Jean. 1990. André-Marie Constant Duméril, Père de l'Herpétologie. Bull. Soc. Herp. France 56: 13-21.

Mayr, Ernst. 1982. The Growth of Biological Thought. Belknap Press of Harvard Univ. Press, Cambridge and London. 974 pp.

Mayr, Ernst. 1989. Histoire de la Biologie. Biodiversité biologique et Hérédité. Traduit par Marcel Blanc. I. Des origines à Darwin. pp 1-636. II. De Darwin à nos jours. Pp. 637-1205. Fayard et Livre de poche, Paris.

Merrem, Blasius. 1820. Versuch eines systems der Amphibien. *Tentamen systematis Amphibiorum*. Krieger, Marburg. 191 pp.

Oppel, Michael. 1811a [1810]. [I[er] Mémoire sur la classification des Reptiles]. Ordre II. Reptiles à écailles. Section II. Ophidiens. Ann. Mus. Hist. nat. 16(94): 254-295.

Oppel, Michael. 1811b [1810]. Suite du I[er] Mémoire sur la classification des Reptiles. Ann. Mus. Hist. nat. 16(95): 373-393.

Oppel, Michael. 1811c [1810]. Second mémoire sur la classification des Reptiles. Ann. Mus. Hist. nat. 16(96): 394- 418.

Oppel, Michael. 1811d. Sur la classification des Reptiles. Paris. 84 pp. (Reprint of the three previous articles).

Oppel, Michael. 1811e. Die Ordnungen, familien und gattungen der reptilien als prodrom einer naturgeeschichte derselben. München, Lindauer. 87 pp.

Osborn, Henry Fairfield. 1903. The reptilian subclasses Diapsida and Synapsida and the early history of the Diaptosauria. Mem. Amer. Mus. Nat. Hist. 1: 449-507.

Rage, Jean-Claude. 1985. Origine et phylogénie des Amphibiens. Bull. Soc. Herp. France 34: 1-19.

Rage, Jean-Claude. 1992. Phylogénétique des Lépidosauriens. Où en sommes-nous ? Bull. Soc. Herp. France 62: 19-36.

Rage, Jean-Claude & Janvier, Philippe. 1982. Le problème de la monophylie des Amphibiens actuels, à la lumière des nouvelles données sur les affinités des Tétrapodes. Geobios, Numéro spécial 6: 65-83.

Rösel von Rosenhof, August Johann, 1758. - Historia naturalis Ranarum nostratium. In qua omnes earum proprietates, praesertim quae ad generationem ipsarum pertinent, fusius enarrantur. Cum praefatione illustris viri Alberti v. Haller Societatis Regiae Scientiarum Gottingensis praesidis. Edidit accuratisque iconibus ornavit, Augustus Iohannes Roesel von Rosenhof / Die natürliche Historie der Frösche hiesigen Landes worinnen alle Eigenschaften derselben, sonderlich aber ihre Fortplanzung, umständlich beschrieben werden. Mit einer Vorrede Herrn Albrechts von Haller, Präsidentens der Königlich-Gottingischen Gesellschaft der Wissenchaften. Herausgegeben und mit zuverlässigen Abbildungen gezieret von August. Johann Rösel von Rosenhof. Johann Joseph Fleischmann, Nürnberg. viii + 116 pp., Pls. i-xxiv, i-xxiv, Frontispiece.

Schneider, Johann Gottlob. 1801. Historiae Amphibiorum naturalis et literiae. Fasciculus Secundus, continens Crocodilos, Scincos, Chamaesauras, Boas, Pseudoboas, Elapes, Angues, Amphisbaenas et Cecilias. Friederici Frommann, Jena. vi + 374 pp.

Sonnini, Charles & Latreille, Pierre-André. 1801. Histoire naturelle des Reptiles, avec figures dessinées d'après Nature. Detterville, Paris. Vol. I: xxij + 280 pp, 14 plates. Vol. II. 332 pp., 32 plates. Vol. III: 335 pp. 6 plates, 1 folding table. Vol. IV: 410 pp., 14 plates.

Wagler, Johann G. 1830. Natürliches System der Amphibien, mit vorangehender Classification der Säugthiere und Vögel. Ein Beitrag zur vergleichenden Zoologie. J. B. Cotta Buchhandlung, München, Stuttgart & Tübingen. Vi + 354 pp. Atlas. Pls. 1-7.

Wake, David B. 1966. Comparative osteology and evolution of the lungless salamanders, family Plethodontidae. Mem. Soc. Calif. Acad. Sci. 4: 1-111.

Recent Literature

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The books and a journal listed here are not fully reviewed but merely listed with brief comments for the attention of the readers of this journal. Full reviews of these titles and any others covering the subjects of *Bibliotheca Herpetologica* are invited from the readers. Please contact the Editor with your proposals or contributions.

Adler, Kraig (Ed.). Contributions to the History of Herpetology. Volume 2. Kraig Adler, Herpetologists of the Past, Part 2; John S. Applegarth, Index of Authors in Taxonomic Herpetology, Second Edition; R. Altig, Academic Lineages of Doctoral Degrees in Herpetology, Second Edition. 2007.
Saint Louis, Missouri. SSAR, Contributions to Herpetology, volume 21: (2), 389, (4). Clothbound, 4o. ISBN 978-0-916984-71-7. Available from the publisher, ssar@herplit.com, $65.

The first volume came out in 1989 in time for the 1st World Congress of Herpetology in Canterbury, England, where a softbound version was presented to the congress delegates. Volume 2 was issued to commemorate SSAR's 50th anniversary meeting, which was held in Saint Louis, USA during July, 2007 and, again, a softbound copy was included in the meeting bag.

As is evident from the title, this book is divided in three sections in which the first fills more than 70 % and consists of extensive biographies of 285 recognized herpetologists from around the world and throughout time. All have played roles in building the science of herpetology and are now deceased. The length of each biography varies but makes up on average, with text, a portrait and one or two signatures, about a page of this quarto size book. They are arranged in an approximate chronological order. Volume 2 embraces people that have passed on after the compilation of part 1 but most are herpetologists that for any reason could not be included in the first volume (which focused on 152 herpetologists). The index covers the biographies in volume 1 as well, making it comprehensive to date. Volume 1 has been out of print since 2000 but the text is now available gratis on the web (www.ssarherps.org).

The other two sections are updated and expanded versions of those in volume 1. This book is of course of significant importance to any herpetologist or historian in biological disciplines but in particular for those that are concerned with historical, educational or taxonomical herpetology. It is definitely not just a reference book but affords a truly enjoyable reading.

Adolphs, Klaus. Bibliotheca Cordyliformium. Neues Quellenverzeichnis Gürtelschweife und Schildechsen (Reptilia, Cordylidae & Gerrhosauridae). 2006.
Sankt Augustin, Germany. Squamata - Verlag. 303 pages. Clothbound, 8o. [Bibliotheca Cordyliformium. New Source Register of Girdle-tailed and Plated Lizards.] ISBN 978-3-9805086-1-2. Available from the publisher (www.squamata.de) in Germany, €42, or Bibliomania! (www.herplit.com), USA, $69.

This is a second edition of a bibliography that appeared in 1996 with the title *Bibliographie der Gürtelechsen und Schildechsen (Reptilia: Sauria: Cordylidae & Gerrhosauridae)* [Bibliography of girdled lizards and plated lizards]. The contents have been enlarged from 255 pages in the first edition.

The book lists 1,373 full citations (1,040 in the 1996-edition) alphabetically by authors to

journal articles and books. For each record are added the taxa dealt with and annotations made on the subject of the cited source, such as where the taxa were found or a certain biological treatment. Details of reprinted versions of out of print books ("Nachdruck") are given. Although the text is in German the bibliography and the other sections are still very usable for persons not conversant in this language. For some English references there is even an original "abstract" or "summary" in English. In addition to the bibliography there is a section on the systematics of the two African lizard families as well as indices of the taxa, authors and coauthors, plus subjects in English.

Linnaeus described three species in 1758, all still being valid under new genera. The reference to the tenth edition of *Systema Naturae* (1758) has the publisher's name contorted; it should be *Laurenti Salvii*. The reference to the twelfth edition of *Systema Naturae* is all wrong except for the number of pages. The German pirated edition from 1760 of *Systema Naturae* (1758) has erroneously been quoted in its place and the handsome 1963 reprint of the herpetological part is omitted. The correct citation following the style of the book should be: Linnaeus, Carolus (1766): Systema Naturae, […]. Tomus I. Editio duodecima, reformata – Holmiae [Stockholm]: Laurentii Salvii (12. Edition), 532 S. [Nachdruck: The Ohio Herpetological Society, Ann Arbor, Michigan, (1963): Systema Naturae. Editio Duodecima, Reformata. Classis III Amphibia, (4), 347-393, (2)].

Murphy, James B. Chameleons: Johann von Fischer and Other Perspectives. 2005.
SSAR, Herpetological Circular No. 33: (5), 123. Paperback. ISBN 0-916984-66-4. Available from the Publisher, ssar@herplit.com, $13.

This rather small but exquisite book contains an English translation of von Fischer's early treatment of keeping the European chameleon in captivity, originally published in archaic German in 1882. Murphy also provides a chapter on the history in the literature of the biology and husbandry of chameleons followed by a useful reference list. A most appealing part that will make this book a real classic on the bookshelf of any biologist is the colorful 65-page long gallery of chameleon illustrations appearing in the literature from the 15th to the early 20th century.

Sekretär. Beiträge zur Literatur und Geschichte der Herpetologie und Terrarienkunde, Volume 7, Heft 1 (2007).
ISSN 1612-2399. Membership or subscription: www.lght.de/lght.htm, currently €10 yearly

This journal is published by a working group of the German Deutsche Gesellschaft für Herpetologie und Terrarienkunde (DGHT) that specializes on the literature and history of herpetology and terraria. It was established in 2000 and has a geographically restricted membership due to the German language but it is truly open to all. The members meet yearly in March in Gersfeld not far from Frankfurt am Main, Germany. The format of the journal is quite similar to *Bibliotheca Herpetologica* and it has a comparable variance of the contents covering historical herpetology and bibliography. The first issue in 2007 has 67 pages and contains a long paper on the discovery and now protection of the giant lizards *Gallotia* spp. of the Canary Islands authored by Wolfgang Bischoff. Jakob Hellermann reports on the history of the Zoological Museum of the University Hamburg and its herpetological collection including a biography of Johann Gustav Fischer, the most productive herpetologist of the Museum. The last long article is by Manfred Niekisch and deals with the vignettes in Rösel von Rosenhof's *Historia Naturalis Ranarum Nostratium*. Although seemingly quite narrow in scope the article provides a wealth of information on the author and his magnificent book on Anurans from 1758. The journal is in German with the first two papers having English abstracts barely longer than the titles, but the English summary of the last paper is extensive and detailed.

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